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METAL WORKING IN THE ANCIENT WORLD

HERBERT MARYON[1]

PLATES XVI–XX

IN order to study the development of the craft of the metal worker in antiquity, we may consider first that vast collection of material discovered during the excavation of the Royal Cemetery at Ur in Mesopotamia by Sir Leonard Woolley and his colleagues during the years 1926 to 1931. The date of the cemetery was estimated by Sir Leonard to be from 3500 to 3000 B.C.[1a] No other considerable mass of material from so early a date exists elsewhere. The craft of the metal worker was fully developed at the beginning of the period covered by the cemetery, so a period of some centuries before this should be allowed for its initial stages of growth. On this occasion, therefore, we will pass over the more primitive efforts of the pioneers of the craft—their pins and hooks and trinkets, which have been found in the settlements and cemeteries of the fifth and later millennia—and commence our review with a study of the more skillful craftsmanship involved in the production of bowls and vases constructed from sheet metal.

But first we must devote a few moments to (1) an examination of the methods by which the craftsman heated his work, and (2) the means he employed to soften metal which had become hard by hammering. To heat his work he employed the charcoal fire.

THE CHARCOAL FIRE

In ancient times the sole means of obtaining the heat necessary for the smelting of the ores, the melting or the soldering of gold or silver, copper or bronze, was the charcoal fire; and perhaps, for some quite small works, the oil lamp. Except in China, where coal may have been employed from early times, and the exceptional use of coal from a surface outcrop elsewhere, all the great works of the past, until the introduction of coal-gas and the gas blowpipe in the nineteenth century, were smelted, cast, soldered or fusion-welded by means of the charcoal fire. According to the size of the work and the temperature required, the fire would be excited by the draught from a chimney, by bellows, by fanning, or by the mouth blowpipe. Bitumen or the other inflammable materials would not have produced a suitable flame.

ANNEALING

A craftsman who hammers a piece of metal finds, after a few minutes' work, that the metal becomes hard, and by no amount of additional hammering can he carry his work much further. The ancient craftsman would wonder why his metal had become so difficult after it had been so pliable and easy to work at first. Then he reflected that it had been soft when it came originally from the fire. Was it soft because it had been heated? Would it grow soft if heated again? It was worth trying. He tried, and the metal became as easy to work as it had been at first.

He had discovered the art of annealing. The ancient craftsmen could not have produced

[1] My thanks are due to Dr. H. J. Plenderleith, Keeper of the Research Laboratory, British Museum; to Professor Bernard Ashmole, Keeper of the Department of Greek and Roman Antiquities; and my other colleagues in the British Museum; also to Miss G. M. A. Richter of the Metropolitan Museum, New York, for help in the many problems which have arisen in the preparation of this paper.

[1a] This date is now generally regarded as too high, with the cemetery belonging after 2900 B.C. Editorial Note.

the vases and bowls which have come down to us from, say, the Royal Cemetery at Ur, unless they had annealed them a number of times in the course of manufacture.

In annealing a piece of metal we may remember that although the external shape of the object does not change, yet, under the influence of heat, the crystalline structure of the metal is rearranged, strained crystals adjusting themselves and altering their shape and size. So, annealing leaves the metal in an unstrained condition, and this indeed is its main function.

The annealing of a piece of copper is effected by making it red hot. It may be plunged at once into cold water, for the release from strain takes place as it gets hot; the sudden cooling does not alter this condition. Gold or silver is generally allowed to cool a little before quenching.

BOWL-MAKING

To Sumeria we may look for the origins of the craft of beaten hollow-ware, or bowl-making. For there arose early in the pre-dynastic period, at Ur and in other towns, a demand for vessels constructed of those malleable materials, gold, electrum, silver, copper, and, later, bronze; vessels which, both light and pleasant to hand and eye, were practically unbreakable.

Now there were several different methods which the ancient craftsmen developed for the production of metal bowls and vases. A smith could arrive at the general shape he required either by "sinking" it by blows on the inside of the vessel, or he could "raise" it by blows on the outside. Whichever method he employed, he would still have to give the vessel its final shaping, and a general hammering all over to make its surface smooth. This final hammering is called "planishing." Another method of producing a bowl is that called "spinning," by which the bowl is produced by pressing or burnishing it to shape on a lathe. I believe that this method was not discovered till Roman times.

To produce a shallow bowl by sinking it from a disc of metal was not a difficult operation. The craftsman had first to provide himself with a suitable piece of material. Occasionally he might come into possession of a piece of natural gold or copper of suitable size for his work, but as a rule he must either melt his gold or smelt his copper ore, and cast the ingot he required. With his primitive appliances he would not try to cast a very thin disc of metal. A slab or disc, a twentieth or tenth of an inch thick, or possibly one considerably thicker, would seem to be a likely choice. In view of subsequent operations he might make it of circular form – a flat disc. He could cast it between two slabs of baked clay (terracotta). He might scrape a recess of suitable size in one flat slab, and form the back of the mould from another. His crucible also was of clay; his furnace a charcoal fire, excited by bellows or fan. From the same weight of metal he might cast either a large thin disc or a smaller, thicker one. He would find the former more convenient if he wished to raise his bowl, and the latter more suitable for one produced by sinking.

Bronze when red hot is very brittle, and if struck with a hammer it is likely to shatter into fragments. Therefore it cannot be raised or sunk when hot, nor can it be welded.

Sinking. In his earliest efforts at bowlmaking the smith might try to hammer his metal into a suitably shaped hollow cut into his workbench, or anvil-stone. But he would soon find that such an hollow was not really necessary. For he had but to hammer near the center of his disc, while it rested on his anvil, for the metal to become slightly convex on its under side. Indeed it would become a saucer-shaped bowl after a little more hammering. The smith would use a convex-faced hammer, and would direct his blows in a long spiral, round and round the disc, till he came to the edge. Then he would need to anneal the work.

Hammering and annealing would be repeated till the bowl had attained the desired shape.

We may remember that in England there used to be made a silver five-shilling piece, a coin which had an inscription in relief running round the outer edge of the rim. By continued hammering near the center of one of these coins, a semispherical bowl could be made, the inscription on the rim being left undamaged. This method of making a bowl, we repeat, is known as "sinking."[2] The alternative method, by striking blows on the outside is called "raising" and is described in more detail below.

Raising. The method of "raising" a bowl by means of blows on the outside of the vessel is as follows: suppose a vase like fig. 2 is to be made. It is 6 inches high and 6 inches wide at the mouth. Its base is slightly convex on the inside, and 3 inches across. It can be raised from a disc of metal say 9 inches in diameter and .06 inch thick, This is about the thickness of an English penny.

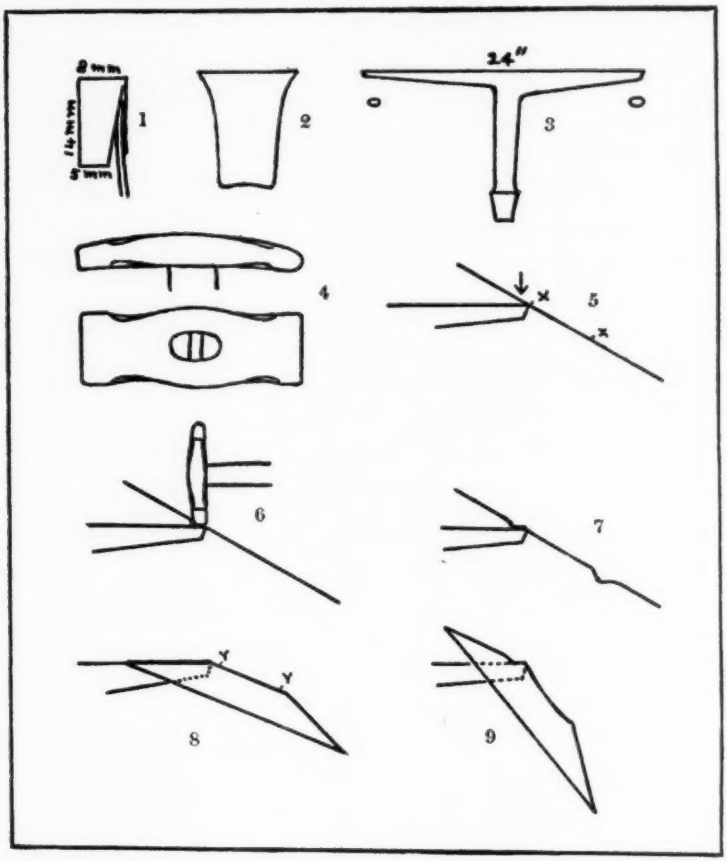
Now it should be realized that to make a vase of this size from a sheet of metal of the dimensions given would involve the compression of the circumference of the disc from about $28\frac{1}{4}$ inches, the distance around a 9-inch circle, to about $18\frac{3}{4}$ inches, that being the distance round the rim of the vase. If, in raising the vase, the work done by the craftsman resulted in the compression of the metal from $28\frac{1}{4}$ inches to $18\frac{3}{4}$ inches (a difference of $9\frac{1}{2}$ inches), then the metal would have become considerably thicker than it was at first. But, generally, the worker would not wish for such an increase in thickness. What he needs is a considerable increase in height, and, by a suitable choice of tools, and of blows, a skilled worker could attain that result. Indeed, with similar blows he could make the vase either taller or shorter as he wished—solely by using a differently shaped hammer.

A stake is a specially shaped anvil against or upon which the sheet of metal is held while it is being struck with the hammer. A conveniently shaped stake is that shown in fig. 3. It stands firmly in a heavy block of wood, or it may be held in a vise. Its arms are elliptical in section, and measure respectively about $2\frac{1}{2}$ inches wide by $1\frac{1}{2}$ inches deep, for large work; and $1\frac{1}{2}$ inches wide by 1 inch deep for smaller work. The end of each arm is undercut to the extent of about 20 degrees, and any sharp corners are rounded off lest they cut into the metal. The raising hammer, fig. 4, has two faces, each not less than $1\frac{1}{4}$ inches wide. The face in general use is quite flat, and rather less than $\frac{1}{4}$ inch thick or high. All its front corners and edges are rounded away lest they cut into the metal. The second face, though as wide as the other, is rounded instead of flat. Its edges to right and left are ground off like those

[2] When the craftsmen of the ancient world became more skilled, they were able to make quite large bowls, and in Western Europe in the Late Bronze and Early Iron Ages cauldrons eighteen inches or more in diameter were made from bronze of a finished thickness not greater than one hundredth of an inch. For example, in the Norwich Museum, Norfolk (from the River Wensum, Swanton Morley), are fragments of a cauldron, nineteen inches in diameter and perhaps eight inches deep, with a fabric of that thickness. The cauldron had a strong iron band round its mouth, measuring .55 inch by .2 inch, and another thin strip inside the rim. The edge of the cauldron ran within this strip, as shown in fig. 1, and thus has been protected from wear. Of course, the ingot from which this cauldron was made was originally much thicker than this. But such a cauldron could have been made from a disc of bronze measuring nine inches in diameter by one tenth of an inch thick.

In this example the bronze is of a bright yellow color, like modern gilding metal. That a vessel of this size could be made with a thickness of metal no more than .01 inch shows very considerable skill in hammering. A large proportion of the work must have been done by hammering on the inside of the vessel against a solid anvil or stake; though doubtless the whole cauldron was finally planished or hammered smooth by an even hammering all over from the outside, while that part of the work being hammered rested upon a stake, or small anvil, of suitable shape. My experience shows that it is practically impossible to "raise" a bowl of such thin metal by blows on the outside of the vessel, though it is possible to "sink" one by blows from the inside.

on the other face. This curved face of the hammer is used when it is found that, under the blows from the flatter face, the vase is not growing tall enough, and that the metal is getting thick instead. The rounded face of the hammer is employed therefore to thin the wall of the vase and to increase its height. The raising hammer has a very long handle, twelve to sixteen inches.



FIGS. 1–9

A compass line is drawn about the center of the disc a little less in diameter than that of the vase base (three inches). With the arm of the stake pointing towards him the craftsman holds the disc tilted up as shown in fig. 5, against the end of the stake with the scratched line opposite its upper corner. With the flat side of the hammer a strong blow is given to the metal a quarter of an inch outside the scratched line. The effect of this blow is to bend downwards that part of the metal touched by the hammer, so that instead of sloping up-

wards beyond the spot where it rests against the top corner of the stake, it is now driven downwards to be in close contact with the upper surface of the stake, fig. 6. Attention must always be given to the angle at which the hammer is held. The top edge of the hammer face, that furthest from the handle, should always be driven home, so that there is a sharp "click" as the face of the hammer compresses the metal between it and the top of the stake. If this point is overlooked the progress of the work will be retarded.

The disc of metal is now rotated a little, and another blow struck beside the first. Care is taken to ensure that no gap or pleat occurs between the portions of metal driven down at

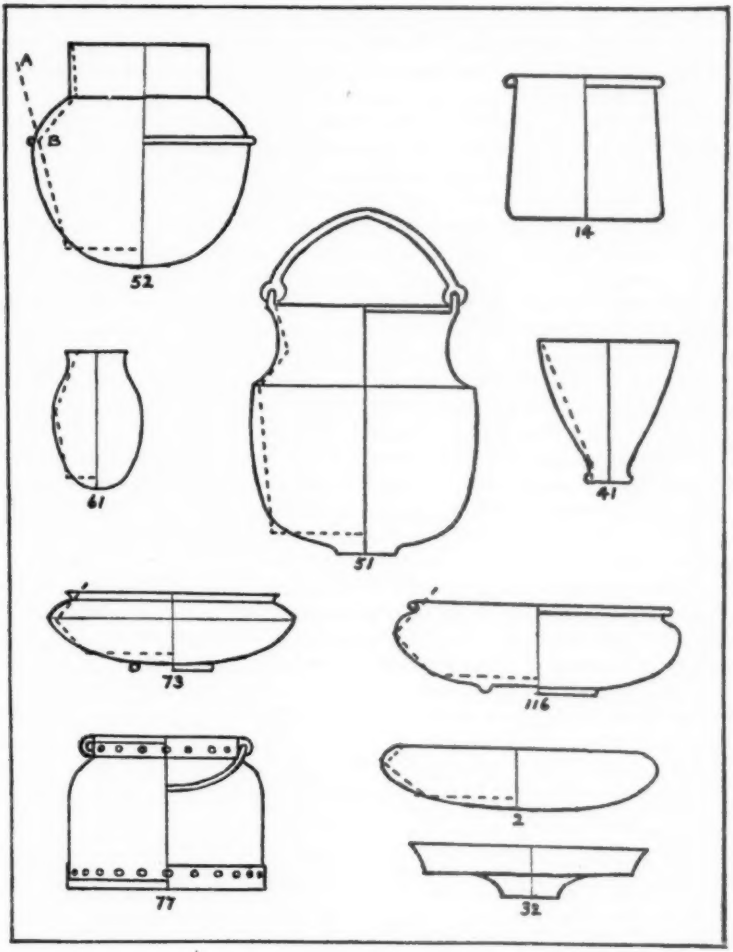


FIG. 10. METAL VASE SHAPES FROM UR, WITH WOOLLEY'S TYPE NUMBERS.

each blow. After a few blows have been struck, it will become clear that the sides of the vase are beginning to grow out of the flat sheet. When the first row of blows has been completed, the disc will have the appearance shown in fig. 7.

A second and a third row of blows is given to the disc, always striking a little way beyond that part of it which lies in contact with the top of the stake. In a long spiral the hammering will at last approach the top edge. The bowl will now have the appearance shown in fig. 8, and it will feel hard and springy. No good will be done if the hammering is continued before the work is annealed. The work should be heated to a dull red and quenched in water. For the second and subsequent "courses" the metal should be tilted up so that its recently reshaped surface is held at a similar angle above the top of the stake to that of the previous course, fig. 9. A watch should be kept that there occurs no undue wear opposite the original scratched line, X. Should the metal seem to be thinning overmuch, a new scratched line, say at Y, is made, and the work of raising continued from there.

In fig. 10 are shown a number of metal vases found in the cemetery at Ur, with their type numbers as classified by L. Woolley. Each drawing shows on the right hand side a view of the finished vase as seen from the outside; on the left a sectional view; and, in dotted lines, the shapes which the vase would be likely to have taken while passing, under the hammer of the craftsman, from the original flat disc of metal to its completed form.

A glance at the dotted lines in fig. 10 will show that there is no necessary finality in the existence of an angle produced in the profile of a bowl in the course of raising. The angles may be moved or removed as desired. They represent just convenient corners from which the raising of the sides or neck of the bowl may proceed, and they may be varied as desired. For example, it is desired to obtain a narrow-mouthed vase, Type 52. After raising the vase to some such shape as that shown at A, a fresh corner at B will prove a convenient place from which the upper part of the vase may be raised.

If the craftsman has difficulty in getting the top of the vase narrow enough, he may find that the trouble arises from the fact that the metal there is getting thin. He will then use a narrower raising hammer; one with a face $1\frac{1}{4}$ inches wide, as before, but measuring $\frac{3}{16}$ inch or $\frac{1}{8}$ inch high instead of the $\frac{1}{4}$ inch of the tool he used first. With this hammer he will be able to raise thinner metal, but the tool will mark, and perhaps cut, the metal more than the thicker one. With due care, however, he will see that it does no damage.[3]

Shaping. The shaping of the vase should be undertaken when its upper part approaches the required size—the diameter here should, actually, be rather narrower than that designed, for it will expand a little under the planishing it will receive. The shaping of the work includes the straightening out of unnecessary angles, and a general trueing up all over. The upward curve of the base of a vase may be produced by "sinking" it by blows on the outside, while the vase is supported on a flat stake within. A hammer with a slightly convex face may be used.[4]

[3] The raising of a bowl or jug which is oval on plan may be effected without any great difficulty. Vertical fluting may be produced on any vase form, either by direct hammering on suitably shaped stakes, or by filling the vase with pitch and shaping the flutes by chasing tools. Should the metal get hard, it will be necessary to remove the pitch with heat, and then to anneal the vase before refilling it.

The raising from a sheet of metal of a bowl which is hexagonal or square on plan is an exceedingly difficult operation. The critical hammering necessary to reduce the circumference of the upper part of the bowl is practically impossible at a corner, owing to the lack of resistance to lateral expansion at that spot, and such shapes are normally made by other methods.

[4] Perhaps the most striking feature of the intermediate stages through which many a vase passes bebefore completion is its angularity. The belief that an angular profile for a vase is difficult to attain, and that necessarily it would be avoided by the craftsman, is a

Planishing. Shaping may be done concurrently with the final planishing. This is a general hammering all over the bowl on stakes so shaped as to support that part of the vase which is being hammered smooth. Stakes are made in many different shapes, suitable for the planishing of any form desired. Small stakes may be held in a stout iron bar with a socket at the end. This tool is called a "horse." Hammers also are very varied in their shapes. A skilled worker may have as many as twenty hammers, and use them all on suitable occasions.

Handle or Spout. If desired, the material to produce a lip or spout, or a handle, may be left on the disc from which a jug or saucepan is to be raised. Such material does not get in the way very much during the raising of the body of the work. When that is completed the shaping of the handle or spout may be taken in hand. The earliest examples of such work were found in the Royal Cemetery at Ur, and in Roman times a handle was often made in one piece with the body of a situla.

Wooden Patterns for Bowl Work. Hitherto I have met with no evidence to suggest that any vase form from Sumeria, Egypt, Greece, or Rome was made by hammering over a turned or carved wood pattern, afterwards burnt out or otherwise removed. There would be serious objections to such a method of working. The vase might require to be annealed many times before it attained its final shape, and the annealing could not have been effected with a wooden "form" locked within it.

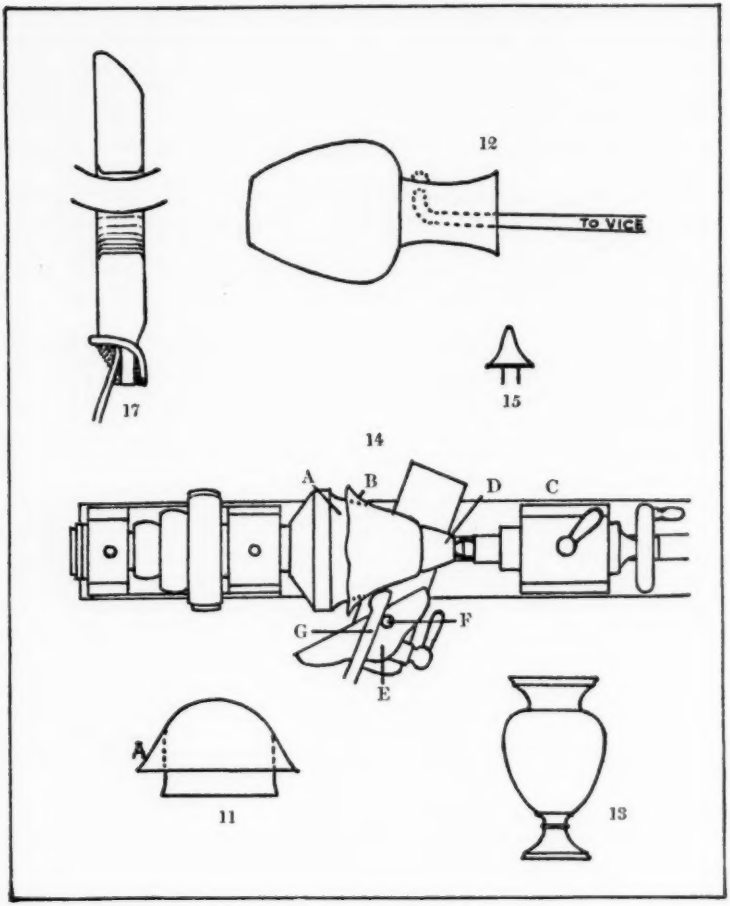
Also from the point of view of the practical craftsman it is not mechanically possible to contract the rim of a bowl, such as that shown in fig. 11, by giving it a series of blows near its edge in order to make it fit a wooden pattern held within it. A skilled metal-worker would admit that the effect of a blow near the edge, say at A, would be to drive in the metal at that spot. But it would bulge out just as much somewhere else. Indeed, the effect of continued blows near the edge would be, not to contract the rim, but actually to expand it. It cannot be emphasized too strongly that if hammer blows, or blows from a punch, are to have the effect of contracting the rim of a bowl, the adjacent parts of the metal must be held so firmly that, at each blow, what is actually a small arc of a circle may be hammered into a chord. To do this it is essential that the metal on each side of the spot struck by the hammer shall not slip back, or be driven away. Instead, it must be held firmly, and the arc crushed flat.

There are in existence a number of lions' and bulls' heads from Al-'Ubaid, Ur, and other places in Mesopotamia, which, it has been suggested, were formed over such carved wooden patterns, or cores, upon which the metal was hammered. For the reason given above I doubt whether this explanation is correct. The head and other metal members of the "Ram Caught in a Thicket" and other animals' heads in gold from Ur, were made from thin sheets, probably hammered into bowl form first, and then by hammer and chasing tools shaped to their final form.

To do this it is quite possible that the gold was laid upon a boss of wood covered with some bituminous compound, which would support the gold mask while it was being chased

popular error. For a vase, in the hands of an efficient craftsman, in the course of "raising" from the flat (sheet) must, of necessity, take an angular profile en route, and it may be finished with an angular profile if desired.

A vase "sunk" by blows from the inside naturally takes a rounder form en route. But whichever process is employed, in order to arrive at its final form, a vase requires a certain amount of "shaping" upon suitably profiled stakes before it is planished. The planishing completed, the vase's open mouth is filed straight, and it is stood, mouth downwards, upon a flat stone and its edge rubbed level.



FIGS. 11–15, 17

to shape. I do not feel that the craftsman would have spent his time in carving the complete mask in wood as a preparation and backing for his gold work. That would not be the way of a metal worker. He would prefer complete freedom for his repoussé work rather than the restricted certainty of the carved model (see below). In a number of surviving heads the bitumen backing still remains within the thin gold. I do not know of any example where a wooden form or core comes immediately next the gold.

The Snarling Iron. The vases from Ur show that a competent hammerman from that town had all the technical skill, except upon a single point, to raise a vase of any shape that might have been called for at any time in the world's history. The one exception is that he seems to have lacked the knowledge of the use of the "snarling iron" or its bronze equivalent, fig. 12. This is a tool by which a boss may be developed on the outside of a nar-

row-mouthed vase or tube at a place which is out of reach of ordinary hand-held tools. The snarling iron consists in a long bar which is held firmly at one end in a vice, or in some other way. At the free end of the tool is a projecting knob. The vase or tube is slipped over the snarling iron so that the knob on the iron is located just opposite the place on the vase where it is proposed to raise the bump. Then the vase is held firmly against the iron. With an iron bar or hammer a smart blow is struck upon the iron between the open mouth of the vase and the vice. The jar thus given to the tool causes it to vibrate strongly, and striking against the vase, it raises a bump at the desired spot. The vase may then be annealed, filled with pitch, and the boss chased or hammered to the shape required. I believe that the snarling iron was not used in the ancient world.

TURNING AND SPINNING

Turning. The introduction of the potter's wheel carried with it the possibility that this new method of producing circular objects might find employment upon other material, not on wet clay only. Indeed, as time went on, and the advances in the technical quality of the potter's art demanded, the vase or pot, when dry, was placed once again upon the wheel and trued up with a sharp-edged tool. For example, the clean cut lines of the profiles of the finer Greek vases are made up of innumerable parallel cuts made with a sharp-edged tool.

The metal worker saw an opportunity here, and by the fourth century B.C. the Greeks were producing patterns on their bronze mirror-backs which show considerable skill in lathe work. On the surface of the mirror-back shown on pl. XVI, C, a serrated tool was employed to produce a ring pattern, with a narrow V-sectioned groove in the center of the ring. Later, in both Greek and Roman times, cups with cast stems and bodies, turned all over, were being produced. Some of this work is so skilful that I feel that it must have been done on a horizontal lathe provided with a good rest. It would be exceedingly difficult to turn such a cup as that shown in fig. 13 in a vertical position. The date of this advance is not clear.

Knurling. In Britain also the Early Iron Age craftsmen were skilled in turning, and even in the first century B.C. they employed the knurling tool to decorate what would otherwise have been a plain moulding. Knurling is the roughening of the edge of a disc or other turned object by impressing on it a series of traverse lines. For example, the focusing handle of a microscope is knurled in order to provide it with a non-slippery grip. The knurling tool is a little steel wheel mounted in a handle. It has a series of traverse lines engraved on its edge. The tool is pressed against the work as it revolves in the lathe, and impressions of the ridges are formed on the work. An example of this work may be seen on the wheel hubs found at Llyn Cerrig Bach, Anglesey, in 1943, and now in the National Museum of Wales at Cardiff.[5]

Spinning. There are in existence many bowls, dating from Roman times and later, which seem to have been spun. Now spinning, fig. 14, is a process much practiced in modern times for the production on the lathe of such bowl-like forms as lamp bodies, reflectors, basins and jugs from sheet metal. There are two principal methods. By one, a form of wood (a) is turned on the lathe to the exact shape of the inside of the required metal bowl. Then a disc of metal (b) is held firmly against this form by pressure from the tailstock of the lathe (c); a small wooden block (d) intervenes between the cone in the tailstock and the center of the disc. The tool rest (e) is furnished with a peg (f) against which the tool (g), a kind

[5] Sir Cyril Fox, *A Find of the Early Iron Age from Llyn Cerrig Bach, Anglesey*, pl. VII, nos. 35 and 36 (National Museum of Wales, Cardiff).

of rounded burnisher with a very long handle, may rest. When the lathe is in operation, it carries the metal disc round with it. The tool is pressed firmly against the metal, using the peg as a fulcrum, so that great leverage may be obtained. The metal is thus stroked or burnished into shape, by repeated movements of the tool from near the lower corner of the bowl to its rim. Of course, the metal may need to be annealed several times.

For a bowl which is narrower at the mouth than at the shoulder a compound "form." which may be removed piece by piece on the completion of the work, may be necessary. In the example just described the work of the tool is done on the outside of the bowl. But, by an alternative method, the work may be done from the inside. In this case a large block of wood is mounted on the lathe, and a recess the exact shape of the required bowl is turned in its face. The disc of metal is fastened over this hollow by means of nails or clamps fixed at intervals round its circumference. The bowl shape is then formed, as the work revolves, by pressing or burnishing the metal into the hollowed-out block.

Among the treasures found in the ship-burial of the seventh century of our era at Sutton Hoo, Suffolk, and now in the British Museum, were nine silver bowls. These seem to have been spun. On the inside of each bowl a series of faint concentric circles, such as might have been produced during the spinning, may yet be seen. No similar marks are visible on the outside. Other examples of this technique may be found in the Museum, but I do not know when spinning was first practiced.

RIVETING

The earliest examples of riveted vessels known to me are some bowls with swing handles from Ur (fig. 10; Woolley's type 77). The body is formed from three pieces of metal which are held together by rivets. Riveting has had a long and honorable career from that time onwards. The statues of Pepi I and his son, from the VIth Dynasty of Egypt, are of copper plates hammered to shape and rivetted together. The faces, hands and feet are said to have been cast.

The earliest metal statues from Hellenic lands were of copper or bronze plates, hammered to shape, and either riveted together or fastened by nails to a wooden framework. Statuettes of either gold or bronze plates, riveted together, are known from Minoan and Etruscan sources. Great riveted cauldrons were made in Crete in Late Minoan times.[6] And the fine bronze pails and cauldrons produced in Etruria and other parts of Italy were exported far and wide. Their successors from Scandinavia and Ireland in the Early Iron Age were very skilfully made, often from extremely thin metal. Irish craftsmen seem to have realized that the rivets themselves might be made things of beauty. So they have given us rows of conical, or concave tent-shaped rivets, so shaped for their decorative qualities (fig. 15).

WELDING

A good deal of the confusion which surrounds the use of the term "welding" arises from the fact that the word itself has changed its meaning within the last century or so.[7] With the advance of technical knowledge the conditions in which welded joints can be made have altered, so that at the present time we may have not only the welded joint produced in the traditional manner by the village blacksmith, but also the "burnt" joints of the structural engineer, who by means of the oxy-hydrogen or the oxy-acetylene blowpipe, or the electric arc, produces a joint in which the adjacent surfaces or edges, say, of two steel plates, may be melted and fused together.

[6] Evans, *Palace of Minos*, ii, p. 570, fig. 356.

[7] Dr. John Percy, *Metallurgy* (London, John Murray, 1864). In the process of welding, the metal is never in a state of absolute fusion.

The familiar sight of a blacksmith at work with forge and anvil, welding together pieces of glowing iron, may have contributed something to the idea current among archaeologists that if pieces of iron could be welded together, so also might copper, bronze, or gold itself. There is, however, no foundation for this belief. The ancient craftsman did not weld gold or silver, copper, bronze or brass. But with the introduction of modern means of producing higher temperatures, we can. Therein lies the root of the trouble. Archaeologists, relying on their acquaintance with modern methods, or misunderstanding the ancient methods, have attributed to the ancient workers power which, with their primitive furnaces, they could never have attained.

The different methods, other than riveting, by which pieces of metal may be fastened together will now be examined.

Pressure Welding, Cold. By pressure, finely divided particles of metal may be welded into a coherent mass with a specific gravity comparable with that of the normal metal, and with a crystalline structure. A pressure of several tons to the square inch may be required.[8] It is probable, therefore, that at the pressure necessary to procure cohesion, the local temperature may rise high enough actually to melt the particles, and the resulting structure become a fused one. Not every metal, however, requires so high a pressure. Pure gold, in the form of foil or sponge, is employed by a dentist for stopping teeth; he is able to weld it into a compact mass by hand-pressure alone. The gold-beater, who makes gold leaf for gilding, repairs a defective leaf by laying a fresh piece of gold over the gap and welding it into position by hammer-work alone.

I know of no examples of ancient goldsmiths' work from any part of the world which provide evidence for pressure welding without heat, with the possible exception of four little gold boxes in the Dublin Museum.[9] These are about $1\frac{1}{2}$ inches in diameter. The vertical side of each box is made from a strip of gold, the ends of which overlap about a centimeter. Each extremity of the strip is burnished down tightly to that part of the strip against which it rests. In the lap between them the double thickness of gold may be seen, and the two layers may be forced apart. There is no solder.

Pressure Welding, Hot. Here again, no part of the material is molten. In welding iron, the metal is not liquid, or it would run like water. The heat required is about 1350° C. At welding temperature, scales of iron oxide flake off continually from the incandescent surfaces, leaving the metal clean. The surfaces to be welded thus come into intimate contact. The iron being soft, the weld takes place by the breaking up of the crystals at the surface under the hammer blows, and the regrowth of the fragments into new crystals, interlocking across the joint. The earliest welded joint known to me is on an iron headrest from the tomb of Tutankhamen, ca. 1350 B.C.[10]

With copper and its alloys a film of oxide covers every part of the heated metal. This film adheres fairly firmly, and prevents any close contact between separate pieces of the metal. Again, as stated above, copper and its alloys are brittle when red-hot, and would be likely to shatter under the hammer. As a result, no successful pressure weld is possible

[8] It is interesting to enquire what pressure per square inch it might be possible to apply through a hand-operated burnisher. If the tool had a good handle, a direct pressure of some 50 to 75 pounds could be given to it. Then, if the area of contact between burnisher and work were one tenth inch square, that pressure would be equivalent to 2 or 3 tons to the square inch. But if the area of actual contact were, say, one fiftieth inch square, the pressure would be of the order of 50 to 80 tons per square inch.

[9] Armstrong, *Catalogue of Gold Ornaments in the Collection of the Royal Irish Academy*, frontispiece, figs. 485–488. They date from the Bronze or Early Iron Age.

[10] Howard Carter, *The Tomb of Tut-Ankh-Amen* (London, 1927), ii, p. 109, pl. LXXVII, B.

with copper or its alloys. I know of no example from any part of the ancient world where two or more pieces of copper, bronze or brass, once separate, have been successfully pressure welded, either hot or cold.

It will be necessary to examine this matter at some length since, for the past fifty years or more, it has been the habit of archaeologists, freely and without reservation, to write of the welding of bars or sheets of bronze as having been commonly practiced by the ancient metal workers. I propose to show that the ancients welded neither gold nor silver, copper, bronze nor brass; and further, I hope to explain how it happened that the archaeologists were so mistaken as to say that they did. In order to do this, however, a consideration of soldering methods is involved, so the matter must be deferred till methods of soldering have been reviewed below.

Fusion Welding, or Burning Together. By fusion welding we can produce so intense a local heat that the adjacent edges of two sheets of metal may be melted and caused to flow together, particularly if the end of a rod of similar metal is held nearby and melted also, so that there is enough molten metal on the spot to fill up any crack between the parts. The edges when melted have little opportunity to draw back from the joint, for there is additional molten metal, provided by the fused rod, immediately to fill any gap. For such a process there are many names: "autogenous welding," "burning together," "fusing together," "acetylene welding," "electric welding" and so on. The *New English Dictionary* gives this definition—"Welding: to burn metals together; to join them by melting their adjacent edges, or heating the adjacent edges and running some molten metal of the same kind into the intermediate space." The vital parts of this definition lie in the words "*melting* their adjacent edges" and "running molten metal *of the same kind* into the intermediate space." All the metal employed is of the same kind—autogenous. The use of solder is definitely excluded here.

By fusion welding it is possible to fuse together thick plates or rods of metal. Today "all welded" girders, and "all welded" ships are made with the aid of acetylene blowpipe, or the electric arc. By these, the very high local temperature is sufficient to melt the edges of the plates and the iron rod which provides additional molten metal to fill the joint. But for thin plates, or a thin wire, the method fails, for, when the temperature is high enough to melt the plates, the metal, instead of running together, draws back instead, and the wires, when heated, break up into a number of small beads. The explanation seems to be that the surface-tension in a thick plate or rod is relatively low in proportion to the mass. But in the wires it is high, for they have so much more surface in proportion to their mass. So, as soon as the temperature rises high enough to melt the surface at any point, the whole of the wire near that place fuses at once. Then the surface tension on so thin a line of liquid is sufficiently strong to break it up into beads; again, with the relatively thin sheet metal of a vase or jug, the molten parts draw away from each other and form a series of irregular "blobs."

Let us suppose that an early metalworker wished to fusion-weld the handle to the rim of a metal jug. His problem was to persuade the thin metal which formed the rim to join with the upper part of the handle, which, we will presume, ran a little way down outside of the neck. He would find that if he deferred the final shaping of the handle till he had got it fastened safely to the jug, it would be easier to arrange the work on the charcoal fire. So with the top of the handle clamped against the rim and the remainder of the handle projecting above the jug top, he would flux the joint[11] and lay his work comfortably on the piled-

[11] The fluxes employed for soldering and brazing are discussed below.

up charcoal on his hearth. He would arrange the air-jet so that it excited the fire near the joint which he wished to make. But on blowing up the fire, he would find that his two pieces of metal showed no inclination to run together, but that the heat would be far more likely to burn a hole in the side of the jug instead. Until the metal actually fused, nothing would happen, but when the heat was great enough to melt the bronze, the thinnest part—the side of the jug—would melt first. The ancient worker could not direct the heat from his fire with the same facility with which his modern representative can direct the flame from his gas blowpipe. But even the modern craftsman with that tool would fail if he tried to weld the parts of a bronze jug together.

Again, the smith needed quite often to join together two sheets of metal edge to edge. He tried to heat them so that they should fuse together. But he always failed, for the edges drew away from each other when they fused; they would not join up. How then could the ancient worker proceed?

He could solve his problem only if he could bring to the critical spot a considerable bulk of molten metal; a bulk of metal large enough to fill the crack and hot enough to fuse the surface of the parts to be joined. On consideration he realized that he could provide such a mass of hot metal by melting it separately in a crucible. It would be necessary also to build a suitable mould round the parts to be joined. By such means he would be able to make the joints which he desired, and we have such examples in our museums.

In the British Museum is the famous "Chatsworth Head," the head of a Greek bronze statue of the fifth century B.C. Some of the locks of hair for this head were cast separately. Then they were fitted to the head, and a groove cut at one end, which was intended to be filled by some of the molten metal which was to fuse the lock to the rest of the head. But the heavy bronze head refused to heat up sufficiently. It chilled the metal, and produced only a fictitious joint, which, in the course of time, failed.

The bronze cauldrons found in Britain and in Ireland, dating from the last few centuries B.C., were constructed of large bronze plates, rivetted together. Their ring handles passed through an arched plate, which was "fusion welded" or "cast-on" to the rim and body of the cauldron. A good example of this technique is that given by Mr. E. T. Leeds in his paper on bronze cauldrons.[12] His No. 33 is a pair of handles from such a cauldron. They were found at Ipswich, and are now in the British Museum. He gives two illustrations of their construction. In these examples the molten metal has not only fused the heavy plate to the rim of the cauldron, but it has also formed external stays, an inch long, giving additional support to the cauldron where it curves outward below the rim.

Casting webs (little irregular flanges) projecting from the external stays mentioned above, provide definite evidence that they were formed in their present position by the solidification of molten metal: they are not rivets. The handle fittings were fusion welded to the cauldron, and the external stays were formed simultaneously from some of the same molten metal which was joining the other parts together.

The work on this cauldron proves conclusively that the "fusion welding" of a joint by the use of liquid metal, melted separately, was a well understood process at the time. Naturally it was but a short step forward to "cast on" a new part.

A bronze sword had broken at the hilt. The blade, minus the hilt, was brought to the smith for repair. He formed a mould for a new hilt, and fitted the broken end of the sword to it. He poured in some molten bronze, and when it was set he opened the mould. The new hilt was there all right, but he was disappointed to find that it was not fused firmly to the

[12] *Archaeologia*, lxxx (1930), pp. 1–36.

end of the blade. Evidently the heat from the small amount of molten metal required for the new hilt had been insufficient to make a good join; the metal had chilled.[13] How could he make sure of a sound job? Obviously by making sure that the sword end was really fused; not just warmed up. More molten metal was required to do the work. How would it be if he were to provide an overflow hole in the mould, and to keep on pouring molten metal through the mould till the sword-end would be sure to be hot enough? He tried this plan, and it succeeded. The smith had learnt that he could join together the broken parts of a bronze implement, and that he could replace a missing part--but if he would make a sound job of it, the broken edges must be made hot enough to fuse.

We are, however, straying into the domain of metal casting, and must return to consider sintering.

SINTERING

Native gold is always found to be alloyed with some other metal or metals, often silver or copper. With gold from different sources, and according to the amount of the alloy present, the melting point of the nuggets is likely to be different. For example, pure gold melts at 1063° C.; gold with 10% silver melts at about 1048° C.; gold with about 10% of copper at about 925° C.; gold with 20% of copper at about 880° C.

Suppose that in early times a goldsmith in Sumeria, Egypt, Greece, or in South America wished to make a large ingot from a number of nuggets, obtained from different sources. He would place them either in a crucible or in a hollow cut in a block of charcoal, and begin to heat them. As the temperature rose, those nuggets which reached their melting points first would flow over the surface of their neighbors. Now when any molten metal or alloy flows over another metal surface in suitable conditions, it will tend to penetrate the surface and to alloy itself with that metal. Nuggets of different qualities might thus become fused into a mass, although the nuggets with the highest melting points had not become hot enough to become completely molten. The resulting ingot would thus be irregular in its composition, some parts of its mass being richer in gold than the rest. If the ingot were now hammered into a sheet its color and its power of resistance to corrosion would not be the same everywhere, so in time it would take a mottled color. Professor Sir J. L. Myres drew my attention to a gold cup said to have come from Olympia, now at Boston, the color of which is irregular, some parts looking like fine gold, and others of a different color. From Professor Myres' observations it might be that the sheet of gold out of which the cup was hammered was formed from a number of nuggets which varied in their gold content, and that they were joined together by some such method as that which we are discussing: so that the whole mass was not at any time entirely molten; otherwise, by diffusion, it might have become more homogeneous.[14]

This joining together of grains or nuggets of varying quality without complete fusion is known to metallurgists as "sintering." The native craftsmen of the province of Esmeraldas, in Ecuador, before the coming of the Spaniards to South America in the sixteenth century, were accustomed to sinter together grains of gold and of platinum, and from the resulting mass to make implements and jewellery.[15] Now to melt platinum requires a temperature of no less than 1760° C. The native workers could obtain no such temperature in the charcoal

[13] I have seen in our museums a number of repaired swords in which the joint had failed from this cause.

[14] On the other hand, it might be that the variations of color are due to selective enrichment of the surface owing to contact with a salty conglomerate of irregular activity.

[15] Bergsöe, *The Metallurgy and Technology of Gold and Platinum among the pre-Columbian Indians* (Copenhagen, 1937), pp. 1–48.

fire, their sole means of melting metals. Indeed, it is only with the oxy-hydrogen or oxy-acetylene burner or the electric furnace that the modern worker can melt this refractory metal. The craftsmen of Ecuador decorated their gold jewellery with pieces of their gold-platinum alloy. When the platinum content was more than 20%, this was white in color. We may remember that the goldsmiths of Sumeria decorated their golden bowls with panels of electrum, a whiter alloy. The goldsmiths of Ireland decorated their golden hair-rings with spirals of silver, a whiter alloy. So, because they had no free silver, the goldsmiths of Ecuador decorated their golden jewellery with a platinum alloy, a whiter alloy.

THE PROCESS OF SOLDERING

There are no terms in archaeological literature about which so much confusion exists as those employed to describe the means by which separate pieces of metal may be joined together without dowels, rivets or other mechanical devices. The French have but one word, "souder," for the processes known to us by the words "to solder," "to weld" and "to sweat." But as we do not wish to confuse the three processes we will consider first the nature of a solder. In the *New English Dictionary* we find "Solder: a fusible metallic alloy used for uniting metal surfaces or parts"; and "to solder: to unite or fasten by means of a metallic solder." Another definition would be "solder: any metal or alloy *whose melting point is lower* than that of the metal or alloy to be soldered, which may be run between the parts to be joined to fasten them together." The essential nature of a solder lies in the fact that it has a lower melting point than that of the material to be soldered. From this it follows that the use of such a term as "autogenous soldering" involves a verbal contradiction. For, if all the metal involved is autogenous, it will have the same melting point, and the word "soldering" is necessarily out of place. This point is discussed further below.

A clear distinction may be made between "*hard soldering*," which is generally employed for jewellery, silverware, and the better class of copper and brass work, for which nowadays a blowpipe or a muffle furnace is employed to melt the solder; and "*soft soldering*," which is employed for tinplate work, the joining of lead or "compo" pipes, and any other work which may be done with a "soldering bit." For the process of soft soldering see below. "Brazing" is the term usually employed to describe the hard-soldering of copper or its alloys, bronze or brass.

"Hard soldering" and "brazing" produce a much stronger joint than one made by "soft soldering." For example, a hard soldered joint will endure a good deal of hammering without injury, but a "soft soldered" joint would be likely to crack open under blows.

In hard soldering the heat employed must be high enough for the work to become either red or white hot. None of the solders or brazing materials employed will melt at a lower temperature than, say, 550° C., and many of the solders in general use melt at 800° C. to 900° C.

When the temperature of the work and the solder has become high enough to melt the solder, it, now a liquid, is affected by gravity and, drawn by capillary attraction, runs throughout the joint, where it adheres to any surface which, through the cleansing action of the flux, or otherwise, is free from oxide. It even works its way below the surface, and penetrates the material to some small depth by alloying itself with some of the metal which is being soldered. This phenomenon is important, for in a hard soldered joint, the higher the temperature employed, the nearer will the material which forms the joint, i.e. the solder, approach the quality and strength of the work itself. This point is discussed further below.

In both hard and soft soldering it is usual to employ a "flux" between the parts to be

joined in order to prevent any oxidation of the surface of the metal during the heating of the work. Today borax is generally employed as a flux for hard solders. Hard solders for gold are usually composed of gold alloyed with copper, or with silver, or with both. Other metals may be added in order to reduce the melting point or to alter the color of the solder. Hard solders for silver are usually composed of silver alloyed with copper, or with copper and zinc. Here again other metals may be added in order to reduce the melting point or to alter the color of the solder. A "brazed joint" is one in which copper or an alloy of copper is employed as solder. Hard solders for copper, bronze, or brass are usually composed of copper alloyed with tin or with zinc. "Spelter," the solder employed for brazing, may be composed of copper 61–33%, zinc 39–67%. It may include tin from nil to 14%, lead from nil to 3%.

We have noted that the composition of a solder may be varied either to alter the melting point, or the color of solder, or for other reasons. For example, it is usual to omit zinc from any solder employed on jewellery which is to be enamelled. For, at the temperature required to melt the enamel, the zinc near the surface of the joint tends to oxidize, and to produce a surface to which the enamel can adhere but weakly. The presence of zinc in many present-day brasses would prevent their use as a base for enamelling.

Soldering, Its Possible Origin. Probably a good time elapsed between the first use of gold and the discovery of soldering. Native gold was possibly employed at first for trinkets, and for small implements such as hooks and eyes, awls and needles. Then it happened that a craftsman, wishing to make a larger object, melted a number of nuggets together in a pot. A bowl or cup could be made from the ingot thus produced. Again, a craftsman, watching the nuggets melt, noticed that some became liquid sooner than others, and the liquid part of the gold ran all over the nuggets that had remained unmelted. It fastened them together, too. For, if he removed his crucible from the fire before all the nuggets had melted, he found that they were all firmly joined together by the cementing power of the first melted nuggets. The craftsman would wonder why some nuggets melted so soon, while others required a greater heat. Then he remembered that nuggets from a certain source always melted sooner than those from other places. (We know that this habit was due to the amount of alloy they contained, probably a good allowance of copper. But he could only observe the fact that those nuggets always melted first.) There came a time at last when he wanted to join together two pieces of gold, and he wondered, just wondered, whether he might stick them together with some of that easy-flowing gold. He tried—and made the first soldered joint.

Probably all the early soldering was done with naturally alloyed golds as solder. Only after long experience did the craftsmen learn that by the addition of a fragment, say, of copper to a small piece cut from an ingot, they could make a solder for that piece of gold. For soldering, as a rule, the work would be placed on charcoal in a clay pot on the fire, the charcoal heaped round the pot, and the fire blown up till the solder was seen to flow.

We will now make a survey of the problems involved when we melt two metals together. For, since every metal has its own melting-point, so, within certain limits, by the combination of two or more metals in different proportions we can make an alloy which will melt at almost any temperature we choose. And we can use that alloy as a solder on any other metal or alloy which has a higher melting-point.

Equilibrium Diagrams. In fig. 16 are shown what are known as the "equilibrium diagrams" of some of the alloys used as hard solders. We will consider the copper-tin diagram first. High up on the left at 1084° C. is the melting-point of copper. To the right is the melting-point of tin, at 232° C. In a row across the top of the diagram are marked 10%, 20% and

so on, up to 100%. These numbers refer to the percentage of tin which is alloyed with copper as described below. In the left hand column are temperatures (Centigrade). Now if we were to melt together 10% of tin and 90% of copper we should produce an alloy with a melting-point at about 1020° C. Again, an alloy of 20% tin with 80% copper would melt at about 890° C., and an alloy of 30% tin with 70% copper would have a melting point about 750° C., and so on all across the diagram. Put in another way, we should find that the more tin there is in any alloy of copper and tin the lower the melting-point will be.[16] Now the

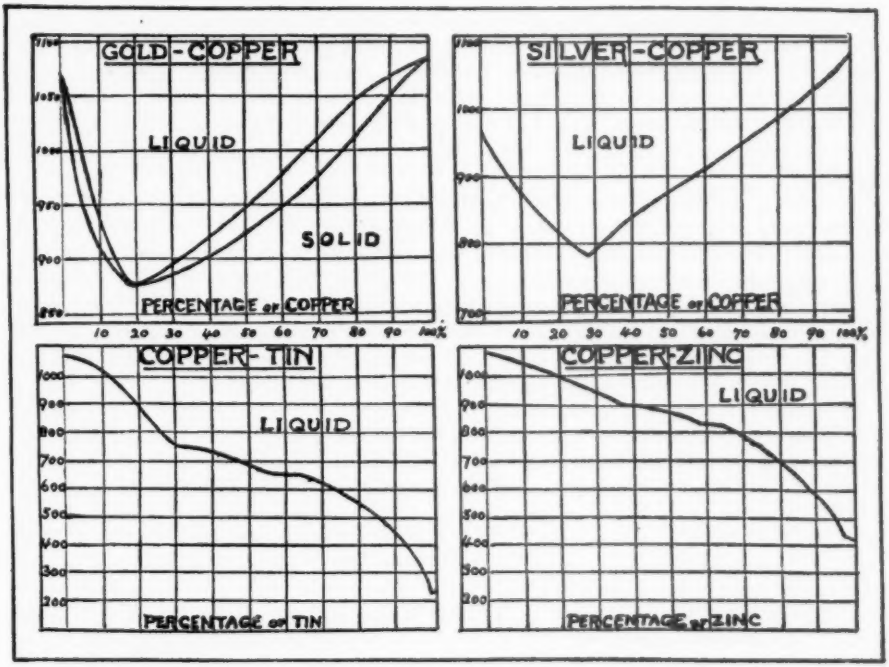


FIG. 16. EQUILIBRIUM DIAGRAMS.

diagram teaches us that to make a hard solder to use as a brazing or hard soldering material on any piece of bronze all we need do is to add some more tin to a portion of the copper or bronze which is to be brazed. For example, 30% tin added to copper reduces the melting-point of the alloy by more than 300° C., and such an alloy will act well as a brazing material. That is a valuable discovery. I do not know when it was first made, but brazed joints were known to the Etruscans and Romans. The knowledge was probably much older.

A study of the copper-zinc diagram shows that the addition of 10, 20, or 30% of zinc will reduce the melting-point of copper less than would a corresponding proportion of tin. Thirty per cent of zinc with copper has a melting-point of about 950° C., while a 30% tin-copper alloy will melt at about 750° C. If we now turn to the gold-copper diagram we find that

[16] The slight rise near 99% tin may be ignored.

the addition of 10% of copper to 90% gold reduces the melting-point from gold 1063° C. to about 940° C. and that 18 per cent copper with 82% gold melts at 878° C. This is the lowest melting-point of any of the alloys of gold and copper, for the addition of further copper raises the melting-point instead of lowering it, as may be seen in the diagram. If we need an "easier flowing" hard solder for gold we must add a proportion of some other metal, zinc for instance. The corresponding silver-copper alloys are shown in the next diagram.

Now when an alloy melts it may not melt all at once. In the gold-copper diagram there are two curves. The upper is known as the liquidus curve, and alloys shown above that line are all liquid at the temperatures shown opposite them. Thus, an alloy with 40% copper at 950° C. would be liquid, and one with 10% copper at 900° C. would be solid. The lower line in the diagram is called the solidus line, and the alloys shown below that line are solid up to the temperature shown opposite them. Thus the 10% gold-copper alloy would not begin to melt till the temperature had risen to about 910° C. At about 940° C. the alloy would be quite liquid. But between those temperatures it would be partly liquid and partly solid.

Now let us consider an alloy of 95% gold and 5% copper. It is in a solid, unmelted condition till the temperature has risen to 950° C. Then it begins to melt. Not all at once, but gradually. Its surface becomes soft, and it begins to droop under the influence of gravity. The temperature continues to rise. At 975° C. perhaps half of the mass is molten, but it can move only sluggishly. But it begins to penetrate and adhere to any clean metal surface with which it is in contact. By the time that the temperature has risen to 1000° C. the whole mass would be quite liquid, and it would run like water under the influence of gravity and of capillary attraction, and it would penetrate adjacent surfaces deeply.

Granulation Work. Already, under the First Dynasty of Ur, the craftsmen of Sumeria could beat up metal into cups and other vessels, and could make fine jewellery. Skilled in soldering, they could make openwork filigree patterns, and solder their wire patterns onto heavy backplates, as on the scabbard of the fine gold dagger from Ur. They produced the first examples of "granulation"—the arrangements of a number of small beads or grains of gold, or some other metal, to form a pattern. The Egyptian goldsmiths in the Twelfth Dynasty, about 2000 B.C., did finer granulation work. But it was reserved for later workers elsewhere to do the finest work of all.

From Greece, Etruria and other places from the eighth to the second centuries B.C. come works in which the grains are so small that 160 or 180 of them measure but one linear inch. The best work done by these fine craftsmen is so delicate that the grains look like a bloom on the surface of the gold, and some of the wire work, done without a background, is as delicate as the finest lace. Innumerable attempts to copy this fine granular work have been made. One difficulty was that, however fine the solder was cut, or filed, its fragments were large enough to clog the fine texture of the grainwork and the fine wirework which accompanied it; another trouble was that the flux, generally borax, boiled up when heated, even if dehydrated, and tended to displace the grains.

Then, after more than two thousand years, the problem was solved. Mr. Littledale, an Englishman, working alone, and trying to follow the methods employed by the old craftsmen, found that it was possible to divide the solder chemically rather than mechanically, and to eliminate flux displacement by eliminating the flux itself. He had tried to keep the grains in place by means of glue. To prepare the glue he had used a copper pot; and, as is the habit of glue pots, it had boiled dry. The surface of the pot inside and out became covered with copper oxide, but on reheating the glue the oxide inside the pot disappeared.

Evidently it had been absorbed by the glue. This glue was used to keep the grains in place. When the work was heated, the glue turned to carbon, and this, combining with oxygen, disappeared, leaving very finely divided copper in the joint. This copper alloyed itself with some of the gold near it, making a solder on the spot, and this solder fastened the grains firmly in place.

Mr. Littledale has employed many variations of the method just described, a very efficient one being this. He takes a copper salt, say, copper hydrate, $Cu(OH)_2$, intimately mixed with seccotine. (This is a fish glue.) With a little water the mixture is painted on to the background, and the grains or wire are arranged while the glue is wet. The background is cleaned up before firing. When heated, the copper salt turns into copper oxide, and the glue is carbonized. The carbon combines with the oxygen in the copper oxide and goes off as carbon dioxide, leaving the finely divided metallic copper in the joint. This copper combines with some of the adjacent gold and makes a fine film of solder just where it is required. Mr. Littledale's brilliant discovery has enabled him to reproduce some of the finest examples of the ancient world, and he has done most beautiful original work by this method in platinum, in gold and in silver. He has named his process of employing a combination of a copper salt with glue—colloid hard-soldering.[17]

On pl. XVI, A, is shown part of a sample made by the author. The larger grains measure 27 to the inch, the smaller 200 to the inch. Soldering was effected by the colloid hard-soldering process. It should be noted that these grains are as small as any found on the finest Greek or Etruscan work, yet, so delicate is the soldering process, the grains are not "flooded" by the solder.

Hard soldering was in general use for gold and silver work from the fourth millennium B.C. in Mesopotamia, as may be seen on the works discovered in the royal cemetery at Ur; and hard soldering was in general use for gold and silver work in Egypt, Crete, Persia, Greece, and Etruria as far back as we have any considerable number of works available for examination. But because the surfaces of contemporary works in copper or bronze. and later of brass, are usually covered with a patina which the curators of museums prefer to retain undisturbed, it has been difficult to find any considerable number of examples which were available for examination. So it has not been possible hitherto to decide precisely how general was the practice of brazing those metals. It seemed desirable, therefore, that a small representative series of works from the relevant countries should be examined in order to put the matter beyond doubt. The result of such a survey is given below, but the list may be extended indefinitely as other specimens become available for examination.

We cannot ignore the famous stand of Glaukos of Chios although the exact meaning of the passage in Herodotus cannot now be determined:

> Alyattes (who reigned over Lydia from 609 to 560 B.C.) dedicated at Delphi a large silver bowl and a stand of soldered iron, one of the most remarkable offerings to be seen at Delphi. This is the work of Glaukos of Chios, the inventor of the soldering of iron; and each plate of the stand is joined to the next, not with pins or rivets, but with solder alone, which holds them together and acts as a binding material to the iron.[18]

[17] A fuller description of this fine achievement, now covered by a patent, may be found in H. A. P. Littledale, "A new Process of Hard Soldering and its possible Connection with the Methods of the ancient Greeks and Etruscans," *The Scientific and Technical Factors of Production of Gold and Silver Work; a Course of Lectures held at Goldsmiths' Hall under the Auspices of the Worshipful Company of Goldsmiths*, 1935–1936, pp. 44–63. Cf. Littledale, British Patent No. 415181, March 23, 1933.

[18] Herodotus, i, 25; cf. Pausanias, x, 16.

From the context it would seem likely that the separate parts of the stand were brazed together: evidently to the Greeks a new treatment for iron. Naturally they had no separate word to distinguish between soldering and brazing: a soft soldered joint would hardly have excited so great an interest, and the emphasis on soldering (the general word κόλλησις is used) shows that Herodotus was not thinking of welding.

In the British Museum is an Etruscan pail of bronze with two movable handles (pl. XVI, B; fig. 17). Its height is $8\frac{1}{2}$ inches and its width at the top $7\frac{1}{4}$ inches. It dates from the fourth century B.C. The body of the pail with its projecting base moulding was raised from a single sheet of metal without a join, and is a most excellent piece of craftsmanship. Round the top runs a swaged moulding,[19] decorated with an egg and tongue pattern. The moulding was bent round the top of the pail, whose edge was given a slight outward curve to make the moulding a good fit. Two cast lugs, each provided with a pair of holes for the handles, were fitted to the rim. A projecting lug from each penetrates the swaged strip (fig. 17) and may be seen between the wall of the pail, outside, and the overhanging edge of the swaged strip. The swaged strip and the two lugs were brazed to the rim of the pail. Some of the brazing material[20] may be seen both outside the pail, and inside, where also the swaged strip overhangs. The material used for brazing was an alloy of copper. Without a complete metallurgical or chemical analysis, the amount of the alloying material, and whether it was tin or zinc, must remain uncertain. On the other hand, the parts could not have been "burnt" together, and "welding" and "sweating" were impossible here. So brazing was the only method by which the work could have been done. It was also the simplest possible method of making a strong joint, and a method in use at the time in Europe, even beyond the limits of Roman rule.

At Whittingham in Northumberland a bronze sword was found in 1847. It is now in the Black Gate Museum, Newcastle-upon-Tyne.[21] The pommel of the sword was formed from a crescentic armlet, into the middle of which a socket was fitted. This socket, and a strip of bronze, made to cover a hole, were brazed to the armlet. I made a very careful study of these joints and I am convinced that they were made by brazing, and not by fusion welding. The sword belongs to the Latest Bronze Age, perhaps 600–100 B.C. In the Dublin Museum is a circular bronze shield dating from the Late Bronze Age. A hole in the shield, perhaps from a spear thrust, is covered with a plate of bronze, which is brazed in position. The shield was found near Ballynamona, Co. Limerick.[22] These examples of brazing, from lands beyond the Roman frontiers, suggest that the Roman craftsman, who showed such technical dexterity in handling the other problems of metal working, could hardly have lagged behind his neighbors in this.

From Uriconium (Wroxeter, Shropshire) there is an iron ring of Roman workmanship dating from before 380 A.D. It has both a welded joint and a second joint in which the brazing material was found to be copper.[23]

I think that I have now cited a sufficient number of examples to show that the brazing of copper, bronze, brass or iron was known and practiced from very early times in the countries with which archaeologists are usually concerned. And indeed, as fig. 16 shows, the

[19] Swaging is the stamping into, or the drawing through a die of a bar or a strip of metal, so that the impression of the design carved or filed in the die may be transferred to the strip.

[20] The brazing material is shown in the drawing by dots.

[21] J. D. Cowen and Herbert Maryon, "The Whittingham Sword," *Archaeologia Aeliana*, 4th series, xii (May, 1935), pp. 280–309.

[22] *Journal of the Royal Historical and Archaeological Association of Ireland*, 4th series, ii, p. 118.

[23] J. N. Friend and W. E. Thornycroft, *Journ. Inst. Metals*, xxxix (1928), pp. 61f.

production of an alloy which could be used to braze a joint on any piece of those materials was a simple operation. To a fragment of the copper or copper alloy which was to be brazed a piece of tin was added. The two were melted together, forming an alloy with a lower melting point than that of the original metal. With this alloy the work could be brazed. When the craftsman had once grasped the fact that he could make a solder to braze any job, simply by adding a piece of tin to a fragment cut from the work, he would have no further difficulty. For the brazing of iron he could use a piece of copper or any of its alloys.

I suggest that in future it should be frankly admitted that the ancient craftsman, who showed such skill in the hard soldering of gold and silver vessels, showed equal competence in brazing those of copper and its alloys.

Soft soldering. There are processes by means of which pieces of metal may be soldered together at a low temperature—at a temperature well below red heat. The solder usually employed is an alloy of tin and lead, generally two parts of tin to one of lead. It melts at 183° C. There are, however, a number of soft solders which melt at considerably lower temperatures than this, some, indeed, at temperatures below that of boiling water. A useful flux is zinc chloride, prepared by dissolving zinc in hydrochloric acid. In Roman times, when soft solder was used freely, no doubt either resin, tallow, or some other oily substance was employed instead.

There are several methods by which a soft soldered joint can be made. The first is very similar to that employed for hard solder. The parts to be joined are placed in contact, and perhaps tied together with iron wire. Flux is run between them, and pieces of solder are placed at intervals along the joint, and the whole work heated until the solder runs.

By another method the "soldering bit" or "soldering iron" is employed. This is of copper, with an iron shank and a wooden handle. It is heated to a temperature well below red heat. Its point is dipped in the flux and then touched with a piece of soft solder. Some of the solder immediately flows over the point, "tinning" it. The bit is now ready for use, being hot enough to melt and pick up by capillary attraction any small piece of soft solder. So hot and loaded with solder, it is placed against the already fluxed joint. As soon as the adjacent metal is sufficiently heated by the warmth of the bit, the solder will flow from it into the joint.

Another method is that known as "sweating together." It is employed when the craftsman wishes to make quite certain that the whole of the surfaces to be joined are in fact actually soldered together. The surfaces are fluxed, and then "tinned," i.e. coated with a film of soft solder. They are then placed in contact, re-heated, and the solder flows through the whole joint, assisted if necessary by some additional solder, run in to fill any gaps. The term "sweating together" may be employed in connection with a hard soldered joint, similarly prepared.

Yet another method of making a soft soldered joint is that known as "wiping." This process is that generally employed in making joints in lead or "compo" pipes. A special solder, composed of two parts of lead to one of tin, is necessary. This solder is completely fluid at 252° C. and completely solid at 183° C. But between those temperatures it is in a pasty condition, in which state it may be moulded into shape by hand pressure. The plumber employs a thick pad of cloth to protect his hand while moulding the pasty material into shape.[24]

[24] For a fuller discussion of soldering methods see Herbert Maryon, *Metalwork and Enamelling* (London, 1912), pp. 6–66; "Soldering and Welding in the Bronze and Early Iron Ages," *Technical Studies in the Field of the Fine Arts* (Fogg Art Museum, Harvard University, 1936); "Archaeology and Metallurgy, Welding and Soldering," *Man*, Nov.–Dec. 1941, pp. 118–126.

The earliest example of a soft-soldered joint which I have examined is the large copper panel in the British Museum with stags' heads in the round, from Al 'Ubaid, dating from the fourth millennium B.C. The stags' antlers are of $\frac{5}{8}$ inch squared copper bars, to which are fastened a number of separate tines. With Dr. H. J. Plenderleith, Keeper of the Research Laboratory, British Museum, I examined these antlers. We found that the joints between the main antlers and the tines were soft soldered. I wish to put this fact on record, for in the published account of the work the joints are stated to be brazed.

In Greek and in Roman times soft soldering was in frequent use for the fastening of the stem and handles to the bowl of a cup. In many examples the solder has now decayed, so that the cup has fallen to pieces. A hard soldered joint would have resisted decay much better.

Overfired Joints. We must recognize the fact that if the old craftsman produced his joints by soldering, he has left us some joints in which there is very little difference of color between the material of which the work is composed and the solder employed to fasten its parts together. How could this be? Some archaeologists thought that the joints were welded. But as we remarked before, in connection with a gold bowl from Olympia, now at Boston, in a soil impregnated with salt—and nearly all ancient sites are of this class—there occurs what is known as "an enrichment of the surface" of objects of gold through the removal of the copper or other alloys from the surface layer. Thus a gold-copper alloy used as a solder may lose its copper content or a gold-silver solder may lose its silver content from near the surface, so that now there is no difference in color between the body of the work and the solder. This effect was noticeable in some of the works from the royal cemetery at Ur.

However, the principal reason for the occasional absence of any contrast of color between the work and the solder employed to fasten it together is a much more interesting one. Let us turn again to the equilibrium diagram of gold-copper alloys (fig. 16). We will consider first an alloy containing 90% gold and 10% copper, which is being used as a solder on a work made of fine (pure) gold. Let us watch its behavior in a rising temperature. At about 910° C. the alloy will begin to melt. At about 925° C. it will be about half liquid and half solid, and to a small extent it will have begun to penetrate the neighboring gold. At 940° C. it will be entirely liquid, and it will run, like a flash, through the joint. We will allow the temperature to continue to rise, and note what happens. At about 975° C. there will be actually the same amount of copper in the joint as at first, but it is now in close contact with gold at a temperature which enables it to take up (alloy itself with) more gold than before. Whatever happens, the actual weight of copper at that spot cannot vary, but it will now alloy itself with a larger amount of gold. This gold it will obtain from those parts near the joint with which the molten solder is in contact. So there will be more metal in a liquid state than before, but its quality will have risen to about 94% gold and 6% copper. The temperature continues to rise. At 1000° C. there will be even more liquid metal than before, and it will consist in about 97% gold and 3% copper. Now a solder which differs from the body of the work by only 3% would be an invisible solder; there would be no difference in color from that of the rest of the work; and to try to prove its existence by assay would be difficult indeed.

From the observations we have made it is clear that the *composition of the solder in a joint varies with the temperature*, and if the temperature has been taken very high, i.e. if the joint is overfired, then there may be no difference in color between the solder and the work. It was Mr. Littledale who first pointed out to me this illuminating fact.

Have we not now discovered the reason for those invisible joints which archaeologists

mistook for welded joints? I think that we have. For we have learnt that when a joint is overfired the solder penetrates further and further into the surrounding metal, alloying itself with it, and becoming more like it in quality, till the color of the solder is indistinguishable from that of the work.

If now we consider a brazed joint on bronze work, we shall find that a similar enrichment of the brazing material occurs when the joint is overfired. The brazing material, a solder composed of copper and tin, or copper and zinc, will become richer in copper as the temperature approaches 1000° C., and its color will approach very closely that of the body of the work. It was this near approach in the quality and color to that of the work itself which misled archaeologists into the belief that overfired joints were welded joints.

It is difficult to unsolder a joint. Anyone who has tried to separate the parts of a piece of work which have been put together with hard solder, by fluxing it afresh and heating it, in order to pull it apart when the solder has again become liquid, will understand the difficulty. The solder has penetrated and alloyed itself with the neighboring metal, its quality has been enriched, and, if the soldering temperature is high enough, the soldered joint may be practically as strong as the rest of the work, and it will not come apart when pulled.

TRACING AND ENGRAVING

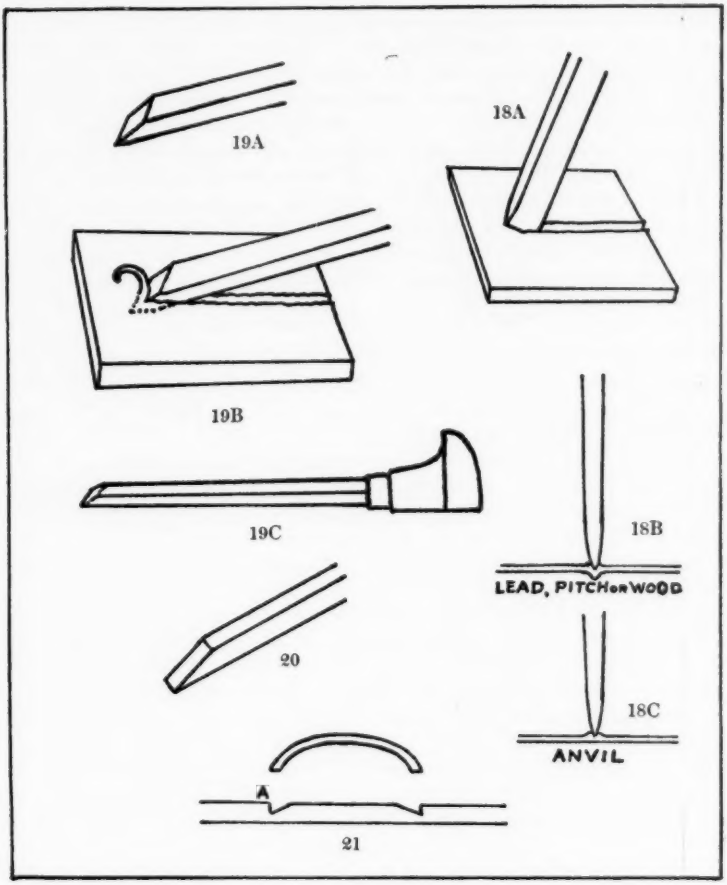
Line Patterns. At a quite early stage in the history of the Bronze Age, the idea seems to have occurred to craftsmen that they might decorate the otherwise plain surfaces of their work by ornament composed of incised line patterns. Now a modern craftsman, faced by the same problem, has the choice of several different methods by which he may produce such ornament. He may choose to etch the design with acid, by a similar process to that sometimes employed to mark the name of the maker upon an ordinary table knife; or he may prepare a steel die with the lines of the pattern projecting in relief, and use that die as a stamp by which many, even thousands of copies of the design may be successively stamped upon metal; or, if only a few, or a single example is required, he may produce the pattern by the use of the hammer and tracer or by engraving.

Tracing. Let us consider briefly what these two last mentioned methods actually imply, and see if we can achieve a clear distinction between the two. We will consider first the line produced by hammer and tracer. The tracer is a small chisel, generally about four inches long, with an edge from about an eighth of an inch to perhaps half an inch or more in length, according to the scale of the work to be done. The edge is softly rounded from side to side, for the tool is not required for cutting. It is intended to produce a groove, stamped or punched into the surface of the metal by successive blows of the hammer on the top of the tool. The intention is to displace the metal, not to cut it. When in use the tracer is held so that its top slopes back slightly from the direction in which the working point of the tool is intended to travel. Each blow of the hammer drives the tool a little way into the metal and, at the same time, slides it a short distance in the direction that it is to go. The heel of the tool may leave a slight mark or "stitch" at the bottom of the groove at each blow of the hammer, but by careful work this irregularity may be minimized. See fig. 18.

The exact angle at which the tracer is to be held varies with each tool, and must be found by experiment. It depends upon the angle which the working edge of the tool is inclined to its axis, for some workers prefer to have a tracer with a working edge inclined perhaps 70° to the axis of the tool instead of the usual 90°. Either straight lines or curves may be produced with the same tool without the slightest difficulty. To trace a quickly curving line, the backward slope of the tool must be slightly increased.

If the line produced by a tracer is closely examined, it will be found that the metal which

originally filled the groove has been displaced, but it has not been removed from the work. The metal at the lower part of the groove has been slightly compressed, and it has tried to get away somewhere. So there will be found a little ridge of metal thrown up on either side of the groove. Further, if the metal is thin, and it is resting upon some yielding substance,



FIGS. 18–21

such as a block of pitch, or lead, or wood, then a ridge will have been driven up on the underside of the metal. If, however, the metal is thick, or if it rests upon some unyielding substance, such as an anvil, there will be no ridge at the back; the groove and its twin ridges will be the only visible effects of the work done. Here again it must be remembered that by polishing or wear the lateral ridges may be, and often are, found to have been removed. A freshly traced line is shown in fig. 18. The lateral ridges, though slight, may be observed.

A traced line, on gold or silver, or bronze, may be formed by a tracer made of bronze, and many such tools have survived and may be found in our museums.

Engraving. We will next consider engraving. The principal tool employed by the engraver is the burin or graver. This is generally formed from a square rod of steel, about three inches long, with a small rounded or ball-shaped handle. The steel rod is ground away diagonally to form a diamond-shaped face, with a point at a projecting lower corner, fig. 19. Generally the tool is so sharpened that a very small portion of the two lower sides of the square rod are ground away also, in order to produce a slight corner or "heel," perhaps a thirty-second of an inch from the point of the tool. The purpose of this heel is that if the tool is held at the correct angle its point does not persist in trying to dig deeper and deeper into the metal, but it slides, on an even keel, at the desired depth beneath the surface, neither digging deeper nor coming to the surface before it is required.

Now if such a tool is pushed across a metal plate it will tend to plough its way in, and to produce either a scratch or a groove according to the amount of pressure brought to bear upon it. If the tool is held firmly and pushed steadily forward, a groove will be cut in the metal, and the material which previously filled the site of the groove will be ploughed out of it, and will curve up in front of the tool in a little curl. This curl of metal will break off at intervals and fall away from the work. The essential point to be observed is that in engraving, the metal which once filled the groove is entirely removed from the work.

A close examination of a freshly engraved line will show a slightly dragged and roughened projecting lip to the groove where the sloping front of the tool has lifted the strip of material which filled the groove, and has torn it away forcibly from the adjacent metal, so that a dragged and torn line of projections is left as a border to the furrow ploughed out by the tool. Of course, this little projecting ridge is easily removed by polishing or wear, so it can seldom be seen on works which have been in use. But its presence, as shown in fig. 19 is conclusive evidence that the line is an engraved line.

A few months ago, when in the British Museum, I saw four gold brooches which had been lent by Lord Elgin. They were found in a grave near Athens, and date from the eighth century B.C., pl. XVII A. They are decorated by incised designs of a ship, a horse, birds, etc. Near them were some bronze brooches from Thebes. They were made in Boeotia, to the northwest of Athens, in the mid-seventh century B.C. They also were decorated with similar incised patterns. What drew my attention specially to these brooches was the fact that both the gold and the bronze examples, in addition to the designs referred to above, were decorated with some additional lines which, in my experience, could have been produced in one way only by cutting with a steel tool, pl. XVII, B.

This kind of line is cut, not by the graver, which is employed for straight-forward linear work only, but by the scorper, a flat chisel-shaped engraving tool (fig. 20). In use, the tool is rocked or partially rotated from left to right and from right to left, alternately, as it is pushed forward. These movements result in a characteristic zigzag line, which is quite unmistakable. The rocking movement naturally puts a great strain upon the edge of the tool. Any carpenter will know what to expect if he rocks a wood chisel in this manner in hard wood. The cutting edge of the blade will be liable to splinter at once.

It occurred to me that it would be well if I could ascertain whether a bronze tool could possibly stand up to such work on bronze. I therefore prepared some bronze tools with the proportions of 10%, 15% and 20% of tin,[25] and shaped their cutting edges as though they

[25] Copper alloyed with over 20% of tin is exceedingly brittle. To try to use it for an engraving tool is just a waste of time.

had been made of steel. I then tried to employ them to produce a "rocked" line on bronze.

I found that the 10% and the 15% tools were too soft to produce any appreciable result. And the 20% tool splintered before it had been rocked half a dozen times. I made repeated efforts with the 20% bronze tool to produce a good rocked line on bronze, but was unable to do so. On copper the tool edge would seem to stand up for a few left and right movements, but on inspection it was seen to be splintered or blunted; and the line on the copper was found to be produced more by pressure than by cutting.

I then tried to produce a straight-forward engraved line (fig. 19) with a bronze graver, but found that though a start might be made, the tool would not stand up to regular work on gold or on copper; it splintered almost at once, and on bronze it would not work at all. I was thus forced to believe that with bronze tools the engraving of bronze would never have become a practical proposition. The Bronze Age metalworker would not have wasted his time in trying to engrave patterns when he could so easily trace them. If he employed a bronze tool, the pattern produced by rocking would be entirely beyond his powers, for on the seventh-century bronze brooches the forward-sliding movement of the rocked line was as much as $\frac{3}{32}$ inch (pl. XVII, B).

Even in the most favorable conditions the engraving of the brooches shown on pl. XVII, A and B, would have been impossible with bronze tools. For the lines were cut with such ease and freedom from anxiety as to how the tool edge was behaving that it is my definite conclusion that a steel tool, and only a steel tool, could have been employed to produce those patterns.

We are thus faced with the position that there could have been no engraving on bronze in the Bronze Age, although flint flakes were certainly employed, together with grinding materials, in the production of the hard stone seals of Mesopotamia, Egypt, and the Near East, and for patterns incised upon shell, from the third millennium onwards. The eighth century B.C., for the introduction of steel tools fits in well with the date fixed for the beginning of the Hallstatt period in Europe. For it would have taken some little time for the practical uses of the steely iron from Central Europe to show themselves in the accomplished manner exhibited in these brooches.

INLAYING

There came a time when a craftsman, looking critically at the patterns which he had incised upon his work, came to consider why they did not stand out more strongly. "If only it had a bit of color," he mused. And the idea came to him that he might perhaps outline his design with a thread of gold. He would try it. He had no gold wire, but from a thin sheet of gold he cut off a narrow strip. This he tried to wedge into his incised line. He soon found that if the line were undercut here and there his strip of gold could be fixed quite firmly by hammer and punch. Later, he learnt to fix pieces of metal of any shape firmly into his background by means of small undercuts and dovetails.

Among the earliest examples of this technique are the little devices inlaid on the blades of spear or axe from the Royal Cemetery at Ur.

The men who made the famous daggers from the Shaft Graves at Mycenae, in Southern Greece, about the sixteenth century B.C., were skilled craftsmen. They wished to obtain contrasts both of color and of relief in the decoration of their work. On a dagger from the Fourth Shaft Grave are lions in relief with inlay applied to the surface of the relief. In the background are rocks, inlaid in bands of gold, electrum and silver. A dagger from the Fifth Shaft Grave has an inlaid strip of silver with cats pursuing birds near a flower-bordered river

full of fish. The cats, the birds and the flowers are of gold and silver inlays, with a few pieces of copper. The background is of niello[26] on a silver plate, which was fitted into grooves cut in the bronze blade, and made secure by hammering down the overlapping bronze edges. From other graves the daggers have lion hunting scenes of gold and silver and niello, flower panels with ornament in niello, and bronze griffins in relief. Much of the work recalls Homer's description of the Shield of Achilles, made for him by Hephaistos.

"Also he set therein a vineyard teeming plenteously with clusters, wrought fine in gold; black were the grapes, but the vines hung throughout on silver poles. And around it he ran a ditch of cyanus, and round that a fence of tin . . . ."

"Also he wrought a herd of kine with upright horns, and the kine were fashioned of gold and tin."

"Fair wreaths had the maidens, and the youths daggers of gold hanging from silver baldrics."

Iliad, xviii.

The poet seems to have had in mind surviving examples of Mycenaean or Minoan craftsmanship.

A novel method by which a thick silver dish might be decorated with figures in relief was practised by the craftsmen of Persia who worked for their Parthian and Sassanian masters from the second century B.C. onwards. The smith wished to produce a raised pattern of figure work on a rather heavy salver, which was too thick for repoussé work. He prepared the figures on separate pieces of comparatively thin silver, bossing them up by repoussé work to the height he desired. He then laid the sheets of silver upon an anvil and cut round each with a sharp chisel, so as to separate it from its background. He trimmed up the outline with a file, and bevelled the edge. He then made sure that it would lie quite level all round. Next he placed each figure in its proper place on the salver and scratched a line all round it. With hammer and a sharp chisel he cut a recess, (fig. 21) all round within the scratched line, and very carefully fitted the embossed figures into the chiselled recess. When the edges of the figure could be pressed right home, although its main masses were still standing well above the general level of the background, he punched down the overhanging edge at A on to the bevelled edge of the figure. He then scraped the background smooth.

This technique proved rather unsatisfactory, for among the examples of its use which are to be found in our museums some of the inlaid plates have worked loose and are now missing, and others, being of thin metal, have worn into holes.

It is interesting to note that in the same lands which developed this inlaid raised figure work there arose in later years the craft of inlaid "damascened" work. By this, lines and plates of gold, or silver, or other metals and alloys are inlaid in steel, in gold or silver, in copper or in brass. It should be remembered that, although this process of inlaying is often called "damascening," it has no relationship to that process by which sword-blades and armour are produced by the true damascene process, in which the primary pattern, or watering, is produced by nature during the cooling down of a high-carbon steel from its liquid condition.

Another contrast of color could be achieved by the use of niello. The Roman craftsmen employed this material frequently for the decoration of their silverware. The inlaying of gold, or silver, or copper wire reached its zenith in the craftsmanship of Persia and India, and remains popular to this day.

[26] Niello, a composition generally of silver, copper, lead and sulphur. It is grey-black in color, and is fused at a low temperature into recesses or lines cut in the work. See Herbert Maryon, *Metalwork and Enamelling*, pps. 171–176.

Irish craftsmen of the Early Iron Age decorated their golden penannular hair-rings with a spiral band of silver or of niello. They seem to have wound a thread spirally round the hair-ring, and with its aid to have marked out a narrow spiral band perhaps one eighth of an inch wide, and with eight to twenty turns round the ring. Both sides of this band were incised with a tracer, and the space between was the result. A strip of dark-colored alloy was then fastened into the groove with silver solder, or occasionally the silver solder itself was used to fill the hollow. The whole ring was then filed smooth, and polished.

On the Sutton Hoo helmet[27] there are strips of silver inlay set in gilded bronze, with a punched repeating pattern filled with niello down the centre of the nose. Each eyebrow on the helmet is decorated with some fifty strands of silver wire between as many lines of niello, with a band of square-cut garnets set below.

Cloisonné and Champlevé. Approaching the work from a rather different angle we may note that craftsmen down the ages seem to have developed two different methods by which a material contrasting in color or in texture with that of the body of the work, might be used in order to enrich the surface of the metal. These methods are the cloisonné and the champlevé. By the cloisonné method open-topped cells, generally of flattened wire, are fastened to the foundation or backplate, usually by solder. They are filled later with some suitable inlay or enamel. By the champlevé method, recesses are cut by chisel or graver into the body of the work, and the hollows thus produced are filled with some material of a contrasting color.

Stone Setting and Enamelling. In the British Museum there is a gold finger-ring from Ur in which flat pieces of stone are set in cloisons of gold. This is the earliest example I know of a technique which has been so widely employed through subsequent ages. The magnificent gold ornaments of Egypt, particularly the pectorals of the Twelfth Dynasty, are of cornelian, lapis and other stones, set within cloisons. We find also some examples with colored glass within the cloisons. This may have been put there in the form of powder, subsequently fired. In that case the glass inlay could be described correctly as a cloisonné enamel. For cloisonné enamel may be defined as any vitreous body placed within cloisons and fired till it adheres to them. I do not know the date of the earliest examples of vitreous enamels. From Greek lands there are enamels on gold jewellery of the fourth century B.C. onwards.

The splendid inlaid garnet cloisonné work on the Anglo-Saxon brooches from southeast England are surpassed only by the garnet and millefiori glass work which enriches the purse-lid from Sutton Hoo,[28] where separate cells were provided for over a thousand garnets, set against a background of gold and ivory or bone. From the same find, the decorations on the sword fittings, particularly the gold and garnet work on the two scabbard bosses and on the pyramids, are some of the finest garnet inlaid work in existence.

Works decorated by the champlevé process are fewer in number than those for which cloisonné was chosen. Possibly the necessity for the use of thicker metal in which the cells might be cut proved a handicap to its more general adoption.

However, there are fine examples of champlevé enamel on the horsebits and shields of Celtic times, and on the hanging bowls of Anglo-Saxon England.

REPOUSSÉ AND CHASING

There were many occasions in the ancient world when a craftsman, wishing to decorate his handiwork with a pattern, came to feel that a design in outline only was not enough: he

[27] Herbert Maryon, "The Sutton Hoo Helmet," *Antiquity*, xxi, (Sept. 1947), pp. 137–144.

[28] *The Sutton Hoo Ship Burial, A provisional Guide* (British Museum, 1947).

wanted relief. Obviously relief might be attained either by hammering the pattern up from behind; by punching the background down from the front, leaving the design in relief; or by a combination of these two processes. Repoussé work was the result. Strictly the word "repoussé" applies only to work done from the back, "chasing" being the term used for work done on the front of the metal. But in the course of time the term repoussé has come to mean work in relief produced by punches, irrespective of the exact method of their use.

Now a simple method of producing relief in a pattern is to punch down its background. To do this it is necessary to support the metal fairly firmly. It may rest upon an anvil or a block of wood, a cake of lead or a bed of pitch. Punches, generally of metal, of any convenient shape, may be employed. In pushing down the background the punches tend also to roughen it, breaking up the light reflected from it. The pattern therefore may stand out by contrast of texture as well as by virtue of its superior relief.

Repoussé tools vary in size and general shape. They have a gently curved surface, so designed that they may boss up, but not put an undue strain upon any part of the work. A punch employed on the back of the metal to emboss it is generally so shaped that it has no sharp corners to its working face. For simple relief, such as the unders and overs of an interlaced strap pattern, the bossing up may be done quite conveniently while the metal rests upon a lead cake. But for a more delicate or intricate relief, the metal may be most conveniently supported on a pitch bed. The sheet of metal, when gently heated, will settle in firm contact with the mass of pitch, which supports it generally, but gives way locally under the pressure of the hammer-driven repoussé tool.

There is hardly any practical limit to the height (or depth) of relief which may be attained in repoussé work. Though, of course, if considerable relief is required, it will be necessary to remove the metal from the pitch bed, and to anneal it, perhaps on several occasions, before the desired height of relief has been reached. It will be remembered that bronze is quite brittle when red hot, so, unlike iron, it cannot be embossed when in that condition.

Repoussé work has been practiced continuously throughout the historic period in most of the lands in which archaeologists are interested. Some of the earliest examples which have come down to us were found at Al-'Ubaid and Ur in Mesopotamia, and date from the fourth millennium B.C. In low-relief there is a bronze plate (pl. XVII, c) from Ur, perhaps the decoration for a shield. It has two lions in the upper register, then two men lying on the ground, and below them, a large rosette. It is remarkably like some of the Greek work of the sixth century, B.C. From the same cemetery at Ur came many animals' heads or figures in gold or silver, and some in bronze or copper. The golden helmet of King Mes-kalam-dug has repoussé decorations. These works demonstrate the complete competence of the craftsman in the management of the metal, and in the use of his tools. From Egypt we have repoussé employed on works as far apart in time as the royal statues of Pepi I and his son in the Sixth Dynasty, and the magnificent golden mask of Tutankhamen in the Eighteenth,[29] and lesser works from the earliest to the latest periods in Egyptian history. Minoan times produced the fine golden cups, found at Vaphio in southern Greece, decorated in repoussé work with spirited scenes of animal life. In the British Museum are the bronze bands from the gates made by Shalmaneser III, King of Assyria in the ninth century B.C., for the city of Tell Balâwât. They are decorated with scenes from that ruler's conquests, and are worked in repoussé. The Cretan shields from the Idaean Cave, published by Halbherr,[30] date from

[29] A number of repoussé tools were found at Tell el-Amarna (Eighteenth Dynasty), and are now in the Manchester Museum and in the Horniman Museum, Forest Hill, London. They include a well-formed tracer, which has seen much service.

[30] Halbherr, *AA*, 1913, pp. 47–53; *JdI*, 1923, pp. 211 ff.; W. Lamb, *Greek and Roman Bronzes*, pl. 18 a.

the late eighth century B.C. They are decorated with semi-oriental motifs, worked in repoussé. The silver bowl, published by Sir J. L. Myres, from Amathus in Cyprus,[31] has decorations in repoussé work. This bowl dates from the first half of the seventh century B.C.

A century later, from Olympia, we have a number of bronze reliefs worked in repoussé. The largest plaque measures no less than 86 cm. in length and 35 cm. in maximum width.[32] A craftsman, faced with the problem of working these human and animal figures in relief would begin by outlining the figures with a tracer, and then he would hammer up the relief on a sand-bag, a cake of lead, or even on a plank of soft wood. He would not attempt to carve the design in wood as a pattern or mould for his bronze work. He would do the metal work direct.

The bronze greaves (pl. XVIII, B) in the British Museum, were found in southern Italy, and date from about 540 B.C. They are excellent examples of the skill and freedom with which a Greek craftsman could work. They are more than that. They demonstrate the fact that a craftsman of the day was prepared to hammer sheet bronze into any shape that he desired. He would not feel any need for a full-sized carved model in wood upon which to shape, or to mount, his work, for he was prepared to hammer up any shape direct. The relief in this example is rather low.

The lion's head (pl. XVIII, A) in the British Museum is Etruscan work of the sixth century B.C. It is a good example of high relief, for the lion's nose is no less than one inch and three quarters above the background. It was worked from a very thin sheet of bronze.

In the British Museum, are some Eastern Greek or Etruscan reliefs (pl. XIX)[33] in silver with electrum overlays, from Perugia, dating from the third quarter of the sixth century B.C., in which the relief is high. One of the reliefs is a panel about nine inches square with two Amazons on horseback. The height of the relief is about 2 cm. The sheet of metal from which it is worked is .025 inch in thickness. For metal of this thickness a relief of this height shows high technical efficiency.

The Gorgoneion in the British Museum (pl. XX, B) is an Etruscan work in silver, and is probably the badge from a shield or cuirass. It measures $6\frac{7}{16}$ inches in diameter, and was made from a sheet about one twenty-fifth of an inch in thickness. It is rather thinner near the edge. It is said to have been found at Populonia, on the western coast of Italy. It dates from about 500 B.C. As an example of low relief work it could hardly be surpassed. The fine design, and the certainty of the workmanship, with its rare freedom from rigid uniformity, make it clear that the great craftsman who was working it, knew that it was going well. He was happy in doing it, and because of that, as our own great craftsman, William Morris, showed us, we too can share that happiness.

Neither Phidias nor any other Greek sculptor would need full-sized carved wooden models upon which to beat the golden draperies for his chryselephantine statues. With his original model as a guide he would hammer them direct, just as the greaves and the Amazon reliefs from Perugia were hammered, and when they had taken shape he would pin them to the wooden framework of the statue. To this also he would fasten the ivory. We read that the golden draperies for the Athene Parthenos were removable; they would be free plates, fastened to a framework, not to a model.

The bronzes from the River Siris, in South Italy, now in the British Museum (pl. XVIII, C), have figures almost in the round. The height of the relief is five-eighths of an inch above the background. The figures were worked in repoussé from a single sheet of bronze originally

[31] *JHS*, liii (1933), p. 25.

[32] *Olympia* (1890), pl. XXXVIII, no. 696.

[33] British Museum, Walter's *Catalogue of Silver Plate*, No. 3.

measuring .04 inch, or one twenty-fifth of an inch, in thickness. They are some of the finest examples of repoussé work in existence, and were made by an extremely able craftsman in the fourth century, B.C. Of course, when he had driven up the main mass of the figures to the required height, he could do nearly all the subsequent work by chasing from the front. But the grand feeling for form which we have in this work proves that he was a craftsman indeed.

In the Metropolitan Museum at New York there is a bronze cuirass, a Greek work of the fourth century, B.C.,[34] with chest and back plates copied from life. Armor, shaped to match the torso, is represented on many statues of Roman emperors. Such armor, when made for use, would be hammered direct by the craftsman. He would have no need to prepare a carved model upon which to shape it.

In the fourth century of the Christian era the Roman craftsmen developed a new and remarkably effective technique, which they employed for the decoration of large salvers or trays, and for some smaller works.[35] They cast a sheet of silver of the required size, and about a tenth of an inch thick. This is a thickness rather greater than is usual, or convenient to use for repoussé work. It results in a very sturdy and rather heavy tray. The design having been drawn upon the front surface of the silver sheet, the work was laid upon an anvil or some other unyielding surface, and the background to the figures was driven down. Heavy punches and hammers would be employed for this part of the work, and the result was that the background, especially those parts near the figures, was compressed to about half its original thickness. Another result was that the spaces reserved for the figures tended to become rather convex, owing to the lateral stretching of the background under the blows. Concurrently with the lowering of the background, the modelling of the figures with chasing tools proceeded, also from the front of the silver sheet. No work at all, at any time, was done from the back of the sheet. As a result, the whole design, both background and figures, advanced rapidly. The whole tray would grow slightly larger as a result of the hammering that it had received, but it would not get seriously out of shape, and the final result would be in sight all the time. After the chasing of the designs on the rim and on the central portions of the tray had been completed, the sinking of the hollowed-out curve of the tray would be taken in hand. Several examples of the employment of this technique are to be found in the silver treasure of Roman date found at Mildenhall, Suffolk, in the great Neptune dish, for example. A similar technique was employed in the well-known Corbridge Lanx, in the collection of the Duke of Northumberland. Both these works are now in the British Museum.

In the great collection of early Irish gold work in the Dublin Museum are two hair-rings of very remarkable workmanship. They are penannular rings of triangular section.[36] Each ring consists in a pair of conical plates fastened together at their outer edges. A piece of wire or tube covers the joint between them. The central aperture and the gap are lined with a third piece of gold. The two conical sides are decorated with parallel circles in repoussé work of astonishing delicacy. There are five concentric rings of repoussé work in the space of one millimeter; the lines are therefore less than 1/120th of an inch apart. The tracing of each circle is not a continuous ridge, but is an intermittent one instead, the tool having been pressed down, lifted and moved forward between each impression or dot. Although the decoration may properly be called repoussé work, it was executed from the back of the sheet

[34] Museum no. 1570.

[35] Herbert Maryon, "The Mildenhall Treasure, some Technical Problems," *Man* (1948), pp. 25, 43.

[36] Dublin nos. 96, 1881, W. 48; Armstrong's *Catalogue*, pl. XVIII, 402, 404. See also Herbert Maryon, "The Technical Methods of the Irish Smiths in the Bronze and Early Iron Ages," *Proceedings of the Royal Irish Academy*, xliv, section C, no. 7, pp. 181–228.

with a pair of compasses. For each pinpoint required, one point of the compass was pressed down lightly on the thin sheet of gold. The tool was then moved forward, perhaps one hundredth of an inch, and pressed down again to produce another dot, and so on round the circle. In this manner about fifty concentric circles of dots are produced in a curved band measuring only ten millimeters across. It is probable that the work represents an Irish goldsmith's attempt to produce an effect comparable with the granular work of his Etruscan contemporaries. He could not copy that work, for his skill in soldering was insufficient. But like the Etruscan grain work, his repoussé work suggests a kind of bloom on the surface of the gold. Technically, these Irish ornaments exhibit workmanship which is more delicate than that on any other ornaments yet discovered in northern or western Europe.

Stamping and Swaging. A craftsman, asked to make a number of copies of a pattern in relief, might feel a little dismayed at the prospect of repeating a single design many times. He would consider whether there might not be found a quicker method than that of working each individual example by repoussé. He might decide to make a model, and to cast from it as many copies as might be required. But casts might be too thick for his purpose and, if in gold, too expensive. Could he make something thinner? An idea came to him. Suppose that he carved the pattern on the end of a metal rod? He might then use it as a punch, and stamp out as many copies as he liked, and in gold too. Again, perhaps he wanted an egg and tongue pattern, to run on a strip of metal, all round a vase. He could make that pattern on a punch-end, or on a slab of bronze, and repeat the impressions as often as necessary. One such border is shown on the Etruscan pail (pl. XVI, B). By an alternative method he might carve the device in reverse on a heavy block of bronze, and either hammer the thin sheet metal into it by punches, or cover the thin metal with a sheet of lead, and drive that down with a mallet or hammer.

In the British Museum there are a number of sets of little figure panels, in gold, from Greek graves of the seventh century B.C. In each panel is the figure of a goddess in high relief. It was made by punching the thin gold sheet into a deeply cut mould. Some work with a tracer and punch followed. In a number of the panels, the figure was then decorated with gold grain work, cut free from its background, and soldered to a new backing. In the Ashmolean Museum at Oxford is a Corinthian die of bronze, dating from the sixth century B.C. It has a number of panels incised with designs of horses, men and ornament. One face, with a plaster cast taken from it, is shown on pl. XX, A. In the Metropolitan Museum at New York is such a die, of Roman date. It has twenty-two ornamental devices carved upon its several faces.[37] Even beyond the limits of Roman rule many examples of stamped work may be found. From graves of the Vendel period in Sweden, dating from the sixth and seventh centuries onwards; from the Sutton Hoo ship burial, in Suffolk; and from Anglo-Saxon burials come helmets, shields and drinking horns which are decorated with thin sheets of bronze, or of silver, some overlaid with gold. These were stamped over dies or models, carved in bronze. Examples of such models have been found at Torslunda in the island of Oland, Sweden.

CONCLUSION

If we glance back over the way we have travelled we shall remember that we discussed first the various methods by which a bowl might be made, and we followed the craftsman through some of the operations of sinking and raising, spinning and rivetting. We watched him annealing the metal on his charcoal fire; we studied the equilibrium diagrams, which

[37] Museum no. 1710.

told us so many useful things about soldering and welding. And we saw how that information might be put into practice in hard and soft soldering; in brazing and in granulation work. We noted the far-reaching effects of the overfiring of a joint. Then we considered the methods by which objects in metal might be decorated, either by lines produced with a tracer, by an engraving tool, or by the inlaying of metal of a different color. We traced the use of repoussé decoration, and saw that fine work had been done by this process throughout the historic period. Lastly, we noted that for the production of a number of copies of a pattern in relief, dies or moulds might be employed.

However, the methods described here do not exhaust the long list of crafts practiced by the ancient smith, who was called upon to produce the tools and the weapons, the domestic appliances and the jewellery of his community. We have said little of the means by which he smelted his ores, produced his sheet and wire, or drilled holes, or carved or gilded his work. And we have been compelled to omit practically all reference to the casting of metals. This is too important a matter to be dealt with in this place, though upon no other technical problem of the ancient world is there greater need for reliable information to counteract the inadequate and misleading theories which at present seem to hold the field.

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WEAPONS AND TOOLS FROM ANYANG, AND SIBERIAN ANALOGIES

MAX LOEHR

FAR EASTERN archaeology still is in its infancy. A stupendous wealth of finds made in localities scattered over a country so vast and comparatively unexplored as China, has quickened rather than satisfied expectancy, while leaving unsolved basic problems and adding new ones to the old. As to the beginnings of the metal age, we are almost as much in the dark as years ago, although materials have constantly accumulated. Accumulation was due, up to this moment, mainly to the collectors' eagerness, and students, while awaiting official reports on excavations carried through at a wondrously inexhaustive site, Anyang, had to rely on what was accessible to them: stray finds, acquired in the market and published.

A welcome and valuable selection of purported Anyang weapons in Swedish collections, both public and private, were made known recently by Prof. B. Karlgren in an article on "Some Weapons and Tools of the Yin Dynasty."[1] The article is of outstanding importance in that it solves one of the most urgent problems in Chinese history: the time of the Chou advent. In an excursus on this problem, Karlgren shows that the event took place in 1027 B.C. (in accordance with the chronology of the *Bamboo Annals*), and not in 1122 B.C., as the so-called orthodox historiography had it. As a corollary, the dates for the Shang dynasty (1523–1028) and Yin (i.e., Anyang), the last permanent residence of the dynasty (1300–1028), are established.[2]

At the same time, Karlgren's article, likely to be quoted henceforth for this admirable result, creates some confusion as to the archaeological side of the subject. The present paper constitutes a sequel to that of the Swedish savant and deals with those points as seem to call for comment.

ORIGINS OF THE ANIMAL STYLE

From the time when Scythian art became known and was studied, the question of its ultimate source has remained obscure. The newest discovery which bears on the question are "animal style" artifacts from Anyang, which however cannot plainly be identified with anything Scythian. Basing himself on these Anyang finds, Karlgren sets forth this theory:

> In Anyang we find specimens indubitably related to the animal style and various bronze tools in Siberia, specimens which take us back to ca. 1300 B.C. at the earliest. Analogous finds from Minusinsk, however, cannot be shown to be coeval or even earlier. There, they appear only in the Karasuk period, dating at best from around 1000 B.C. Consequently, the priority of the Shang artifacts is established beyond doubt.

The conclusion seems logical, but in fact is anything but safe.

To begin with, the reverse argument – since nomadic art appears in Anyang, its date must be accordingly early in the Steppe – is by no means precluded. For if we have to do with genuine nomadic art in Anyang, its date is ipso facto at least as early as Anyang in its

[1] *BMFEA*, xvii (1945), pp. 101–144.

[2] A Chinese scholar, Ch'en Meng-chia, arrived at the same conclusion in a pamphlet entitled *Hsi Chou Nien Tai K'ao* (Commercial Press, Chungking, 1945).

northerly home. The question, then, is whether the "animal style" artifacts in Anyang are genuinely nomadic or genuinely Shang.

The second issue is that of Siberian chronology. Karlgren takes the date "ca. 1000 B.C." proposed by S. A. Teploukhov[3] for the Karasuk Stage in Central Siberia as an unduly high limit, measuring it by lower figures upheld by A. M. Tallgren[4] and G. von Merhart.[5] But these figures refer to a different, later stage, and in the case of Merhart's moreover are superseded. It is probable that even Teploukhov's date will prove to be too low.

A third question involved is that of the Minusinsk inventory in general: does it show dependency on China or the West?

The foregoing three questions will be discussed in the above order.

(1) There are profound differences between Shang art as it represents itself in the decoration of the bulk of the Anyang finds, countless objects of every description, on the one hand

FIG. 1. TYPICAL ANYANG ORNAMENTS.
A: Carved Bone. Royal Ontario Museum, Toronto. After White.
B: Carved Marble. Freer Gallery. After Umehara.

and the much less numerous specimens akin to Nomadic art on the other. Rare by comparison, the latter appear to be restricted to pommels of knives and daggers, and an unexplained implement or adornment ending in jingles or fine sleek horse-heads (fig. 11), called *yüeh-t'i* "moon-forehead" – meaning a moon-shaped horse frontlet – by Karlgren. The differences as exemplified by figs. 1 and 2 are not denied by Karlgren. He only belittles them, saying that a "fresh naturalism" might well be expected in Anyang, because the Anyang people were great hunters and "had access to an exceedingly rich and varied fauna" and had domesticated horses (p. 130). Arguing so, a question of style – Shang versus Nomadic – is treated in

[3] *Materialy po Etnografii*, iv, 2 (1929), pp. 41–62. Cf. *American Anthropologist*, xxxv (1933), pp. 301–327; *ESA*, iii, pp. 186–187; *ESA*, vi, pp. 185–186. For Teploukhov's diagrams see also A. Salmony, *Sino-Siberian Art*, pls. III–IV.

[4] "Eurasian Animal Style," *Acta A* (1933).

[5] *Bronzezeit am Jenissei* (Vienna, 1926.)

a way which is characterized best by an analogy: a painter, say, in Denmark, paints a tablecloth in a manner reminiscent of Cézanne's; no influence of Cézanne's, however, should be sought, for tablecloths are as common in Denmark as they are in France.

To account for the differences, Karlgren refers to conditions obtaining six or seven centuries later in the Huai style, where there is found "a whole world of difference between the 'hieratic' fauna and the 'lay' fauna," and goes on saying that "there is no reason why the same rule should not apply to the art of the Yin" (p. 131). This reasoning is unhistorical. More realistic sculpture had come into being only during those six or seven centuries; what appears in the Huai style side by side with derivatives of older ornamental motifs presupposes that long evolution. There is every reason to believe that nothing similar had happened during Shang times. But Prof. Karlgren thinks that

> it would be quite in accord with the Ancient Chinese ideas that in Anyang there were produced, side by side, sacred vessels in the ritual art style . . . and lay art specimens like the knives and daggers . . . (with animal heads resembling those of the Nomad art), all executed by the same bronze masters (p. 131).

To this it may be replied bluntly that there was no particular ritual style in Anyang. The very same style is found in ritual vessels (used in the ancestral cult) and in ordinary

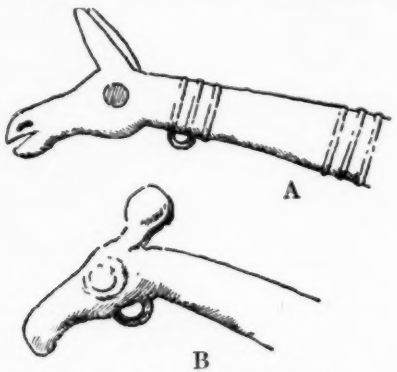

FIG. 2. ANIMAL HEADS OF NORTHERN STYLE.
A: From the Jannings Collection in the Palace Museum, Peiping. B: After G. Ecke. (ca. 1/1)

common-place tools and weapons that cannot be regarded as sacerdotal or ritual, e.g., spearheads, socketed celts, jade carvings, bronze fittings, chariot parts, hairpins. The Shang style is, in fact, ubiquitous – allowance being made for objects bare of decoration and those related to nomadic art. Thus, the assumption of a ritual style would unavoidably lead us back to the Shang style pure et simple.

Then, there is a motif which clearly originated far in the north: the head of the reindeer (fig. 2B). It is out of the question that the Shang should have invented it, and its mere presence demonstrates Northern admixtures in Anyang. The horse and the wild ass, too, point to the Steppe, although both animals may have been known in Honan before the time when they were first depicted by any nomadic artist.

Finally, a factor – not taken into account by Karlgren – remains to be explained, which

is apt to show that the art of the Steppe did not rest on Shang art: it is impossible to trace Shang ornamentation in the bronzes from Suiyüan, Inner Mongolia, and Central Siberia. The only reasonable inference is that the Northerners had their own way and deliberately avoided copying forms not congenial to them. Of course, there are occasional testimonies of contact with Shang and Chou ornamentation, but these appear to be limited in number and what is more, with regard to the motifs: only geometric patterns such as diapers, T-hooks, and zigzags seem to be common to Shang bronzes and nomadic artifacts, a small repertory that has some significance as far as Shang bronzes are concerned.

All in all, ascribing to the Shang those nomadic elements as are encountered amidst the heterogeneous Shang world amounts to ascribing two souls to the Shang folk. It would seem more natural to assume that what looks foreign actually was foreign, that, in other words an infusion of nomadic art left its traces in the remains of the "cosmopolitan" Big City of Shang.

(2) Anyang represents, according to our present knowledge, the oldest Chinese metal age site, taking us back to ca. 1300 B.C. It displays no signs of a primitive stage of metal-working but utter refinement. Primitive stages have, in fact, nowhere been discovered in China up to the present moment. Metallurgy seems to have been brought to China from outside. Whence, is an open question; but whatever the sources were, the way led via Siberia and possibly, Eastern Turkestan, so that the northwestern and northern regions of present-day China were in a favored position.

Regarding Siberia's bronze cultures, Karlgren refers exclusively to Karasuk. In this stage appear "animal style" things in metal, associated with knives and daggers of the same cast as in Anyang. It would be rash to define those Karasuk objects as Scythian art, but Karasuk looks, as E. H. Minns said, "very like the common ancestor of the Scythic."[6]

This stage is dated 1500–1000 B.C. by V. A. Gorodzov,[7] and around 1000 B.C. by S. A. Teploukhov (*loc. cit.*), independent of possible reflections in China. H. Kühn, in due consideration of pertinent Anyang finds in the Toronto Museum,[8] concluded that the Siberian parallels must be at least contemporaneous with Anyang, hence, around 1300 B.C.[9] The date proposed by A. M. Tallgren for the early Minusinsk knives—comparable to Anyang knives—is "about 1500 B.C."[10]

Karlgren argues this way:

> Teploukhov, whose typological sequence of the Minusinsk cultures seems to be generally accepted, tried to establish a scheme of absolute chronology, with Karasuk beginning ca. 1000 B.C. "G. Merhart had placed the beginning of this culture considerably later." Tallgren (*Acta A* 1933) stated "that the Scythian animal style in the Pontic steppes of Eastern Europe was fully developed in the 7th century B.C.," and that it was "not methodologically allowable to place the oldest Siberian finds earlier than this earliest historically datable Scythian province." H. Kühn dated the steppe art from Tallgren's 7th century and Teploukhov's 1000 B.C. back to the 13th–12th centuries B.C.; we should therefore have to surmise that the "animal style" of Siberia . . . flourished in splendid isolation for a period of some 800 years (1300–500) before the contacts with South Russia were seriously established. The chronological discrepancy is too great, and the time scheme is not acceptable (pp. 121–123, 142).

There are serious inaccuracies involved. Merhart's *Bronzezeit am Jenissei* (1926), valuable

[6] "Small Bronzes from Northern Asia," *AJ*, x (1930).

[7] Cf. *American Anthropologist*, xxxv (1933).

[8] "Finds from near Hsiao-t'un to the west of Anyang"; W. C. White, *ILN*, March 23, April 20, and May 18, 1935.

[9] "Chronologie der Sino-Sibirischen Bronzen," *IPEK*, xii (1938), pp. 162–165.

[10] "Trouvailles isolées sibériennes," *SMYA*, xxix.

for its detailed observations, cannot any longer be regarded as a chronological guide. As early as 1927, Tallgren, reviewing the book, found that Merhart was "an outspoken champion of low dating," and referred to several types which he thought were earlier than Merhart had proposed (Minusinsk gryphon-head daggers; Pinega axes).[11] In 1928 he added that new and unexpected materials from Eurasian Bronze Age cultures had so accumulated that even relatively new investigations, e.g., Merhart's and his own ("La Pontide préscythique après l'introduction des métaux," *ESA*, ii), were rapidly growing obsolescent.[12] Written before the Ordos bronzes – not to mention Anyang – had come to our knowledge Merhart's book, concerning Scythian types, is based on the assumption that they were intruders from the west or southwest. A date adopted on that basis is incompatible with the premises upheld by Karlgren, who moreover ignores the fact that the Karasuk animal ornament is not by any means confounded with Scythian art by Merhart.[13] Regarding the two Merhart (quoting Tallgren[14]) speaks of "naturalistische Tierfiguren" after 1000 B.C. and of "skythischer Einfluss" after 500 B.C., clearly discriminating Karasuk from true Scythian things.[15]

Tallgren's "seventh century" must be understood partly as an answer to those who dated Minusinsk finds of Scythian character as late as Merhart. That date, however, does not apply to pre-Scythian artifacts, with which we have to do in the case of Anyang, early Northern finds from China ("Sino-Siberian"), Karasuk, and premetallic animal sculpture from Siberia generally. It is not methodologically admissible to operate with Tallgren's "seventh century" or Merhart's "fifth century" when much older strains of "animal styles" are at stake.

Tallgren's "ca. 1500 B.C." is the date – coinciding remarkably with Gorodzov's Karasuk date – which must be referred to by anyone who tries to show the priority of Anyang before Minusinsk. Karlgren overlooked the fact that Tallgren ("Trouvailles isolées sibériennes"; *SMYA*, xxix, 1919) came to divide the Minusinsk knives into two groups: an early one from about 1500 B.C. – reflected in the Chinese knife-shaped coins from around 1000 B.C., and a late "Scythian" one (Merhart's *Bronzezeit am Jenissei*, p. 18). Instead of Chinese knife-money from around 1000 B.C., we may now speak of Shang knives from after 1300 B.C. G. Ecke's view,[16] in line with Tallgren's, does not require to be corrected (p. 123).

Karlgren's doubts as to the absolute dates tentatively established by Teploukhov –

> from a mere stylistic analysis like Teploukhov's you can establish a relative chronology but never an absolute; for the latter you must have some fixed points through contacts with a datable neighbour art (p. 122) –

are not removed by the datable Anyang finds, because he is not ready to concede to the poor nomads of the north that they should have been the upholders of a metal-culture of their own. Much earlier dates applied to the same stage (Tallgren, Gorodzov) are passed over in silence.

It is therefore not out of place to call to mind the fact that the Karasuk Stage was preceded in Siberia by an Early Bronze Culture, the Andronovo Stage, taking us farther back

[11] *ESA*, i (1927), pp. 189–192, especially p. 191.

[12] *ESA*, iii (1928), p. 186.

[13] *Bronzezeit am Jenissei*, p. 37. What Merhart here calls "Kurgane mit Platteneinzelgrab" corresponds to the Karasuk burials in Teploukhov's terminology; Merhart left open the problem of how those burials were related to the Minusinsk Bronze Age "Ecksteinkurgane" and "Kollektivkurgane."

[14] "Die Kupfer- und Bronzezeit in Nord- und Ostrussland," *SMYA*, xxv (1911); *Coll. Zaoussailov* (Helsingfors, 1916); *Coll. Tovostine* (Helsingfors, 1917).

[15] *Bronzezeit am Jenissei*, p. 16.

[16] *Über einige Messer aus Anyang. Sinologische Arbeiten* (Peking, 1943), pp. 153–162.

in time. This formation spread over the whole of Siberia and was in close contact with the Central-Russian Seima facies. During this stage, the socketed celt of Seima type appears in Minusinsk (fig. 3B). To have discovered that this type migrated from Russia to Minusinsk (and not vice versa) is one of the achievements of Merhart. Pure Seima types are not numerous in Minusinsk, where other forms were developed from the ornate Seima type.[17] Even so, more simplified celts related to the Seima celt occur east as far as Suiyüan or North-China (their exact provenance being in general unknown) (fig. 3 D–E). The socketed celt also belongs to the Anyang inventory (fig. 3 F). Of this important tool, Karlgren only states

> that it is—like simple, outward-curving knives—too commonplace to be of conclusive value in itself, and therefore acquires real importance only in combination with the rest (p. 129),

thereby depriving himself of an important clue to the archaeological conditions before the rise of Anyang.

The Seima celt, associated with the Borodino-Seima spearhead type in an unquestionable manner—a mould combining celt and spearhead was found at Tomsk[18]—is another fixed point bearing on Minusinsk's chronology. The daggers accompanying the Seima celt are of a more primitive type than those from Karasuk; they, too, recur farther west, in Russia. All these tools require the dating of Andronovo earlier than Karasuk, say, before 1500 B.C. The parallels in Russia—Seima, Galich, Borodino, Turbino, Pokrovsk—confirm this: they belong in the first half of the second millennium, most probably between 1700–1600 B.C.[19] Gorodzov's date for Andronovo is "2000–1500 B.C.," Teploukhov's, "1800–1400 B.C."

Now, in Seima and Galich, daggers with animal-head pommels were found. It is impossible to view these forms as derived from Anyang; they are centuries earlier.

The Andronovo stage was again preceded by an earlier chalcolithic culture in Minusinsk, the Afanasieva culture, which takes us back to around 2000 B.C., according to Teploukhov; to the third millennium, according to Gorodzov. The early date is warranted by contacts with the Kelteminarian culture in Turkestan.

Chronological conditions, in short, suggest that the Early Bronze Age of the Steppe started considerably earlier than Anyang. Analogies between the Steppe and Anyang cannot therefore be explained as Anyang-derived.

(3) The Minusinsk Inventory.

In contrast to Shang and Chou art, that of the Ordos desert and of the Sino-Mongolian borderlands essentially resembles the Yeniseians' to such a degree that Minusinsk and Ordos give the impression of a unity. Apart from the Northern admixtures in Anyang, there is nothing much encountered which could be regarded as an obvious influence or a reflection of Shang and Chou forms. Absence, rather, of genuine Shang-Chou types and ornaments is the prominent feature. Under such circumstances it proves difficult from the outset to subscribe to such theses as Karlgren's. There are, moreover, demonstrable connections between Turkestan and Russia on the one hand, and Minusinsk on the other, which show Minusinsk dependent on southern and western centers, all earlier than Anyang.

Regarding the animal style of pre-Scythian cast, free from Oriental influences but akin to certain Anyang things, "we find a very primitive art going back to Neolithic, even perhaps Mesolithic times, stretching across the north of Finland and Siberia."[20] In this primitive art,

[17] Merhart, *Bronzezeit am Jenissei*, pp. 70 ff., 96.

[18] *RLV*, ix, p. 240 B; *Coll. Zaoussailov*, figs. 27–28.

[19] Metal shaft-hole axes found in Seima date from around 1700 B.C., according to John Nestor, "Zum Stande der Vorgeschichtsforschung in Rumänien," *Ber. Röm. Germ. Komm.*, xxii (1932).

[20] Minns, "The Art of the Northern Nomads," *Proceedings of the Brit. Academy*, xxviii (1942), p. 14.

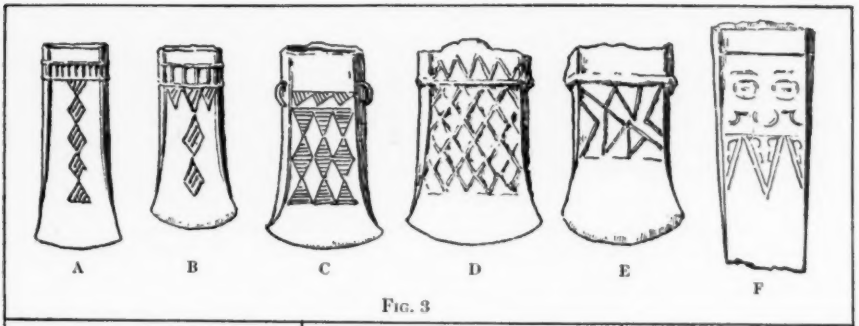

FIG. 3

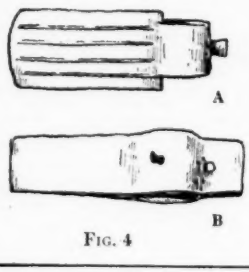

FIG. 4

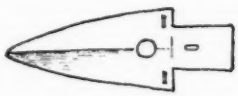

FIG. 5

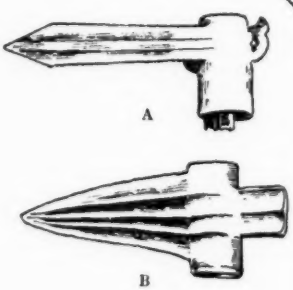

FIG. 7

FIG. 8

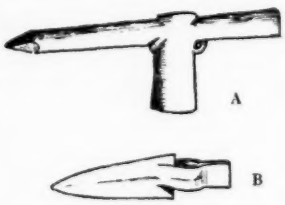

FIG. 6

FIG. 9

FIG. 10

FIGS. 3–10.

FIG. 3. Socketed Celts from Russia, Siberia, Suiyüan, and North China. A: Seima. After Tallgren. B: Minusinsk. After F. R. Martin (ca. 1/4). C: Western Siberia. After A. O. Heikel (ca. 3/10). D: Suiyüan. W. B. Sawyer Collection (ca. 4/7). E: Suiyüan. After Egami and Mizuno (ca. 3/5). F: Anyang (ca. 1/2).

the elk's head is the outstanding motif, but the horse's occurs as well in fine examples from the Urals and the Yenisei region, carvings in antler, horn or bone, which led Borovka to believe that it is in those hyperborean areas that we should look for the sources.[21] The elk-head pommels of daggers from Seima just mentioned come very close to elk-head-shaped stone battle-axes from Olonetz and Finland and Sweden. Ellis H. Minns (*loc. cit.*), because he refers to these axes as pointing to the region which produced the Scythic style, incurs Karlgren's criticism: "Elliot [*sic*] H. Minns . . . is certainly very bold" when he confirms Borovka's thesis by adducing Stone Age axes with animal-head terminals found in Finland (p. 140 note). It seems necessary to mention that V. Gordon Childe and A. M. Tallgren were as bold as Minns, when speaking of "precisely the same naturalistic style"[22] and "irrefutable links"[23] between the Seima and the Finnish elk-heads. A bronze elk-head found in Vallstena (N. Gotland) twenty years ago was unhesitatingly taken by T. J. Arne as new evidence in support of Borovka's view.[24]

In China, on the other hand, no neolithic sculpture comparable to bronze sculpture from Russia, Sweden, Finland, Siberia, Suiyüan and Anyang has hitherto become known.

Thus, formal criteria, chronology, and Stone Age substrata are all alike suggestive of Siberia having been the home of the animal style component in Anyang. I see no way to defend the opinion of Karlgren, arrived at by neglect of facts no less than lack of vision.

A fourth argument is coupled with the neolithic animal sculpture by Karlgren. He asks:

> If Borovka's view, recently endorsed by Minns, that the animal representations have "grown out of the local ground in Siberia, connecting up organically with the Siberian Stone Age," were accepted, "are there any sources in support of the existence of a Siberian-Suiyüan high-culture at such an early date?"
>
> "From the Western side we have hardly any hope of finding any literary confirmation. The only chance would be the Chinese literature, that great thesaurus of Asiatic history" (p. 140).

This argument is astonishing. It is entirely irrelevant, one should think, what written sources of a late date contributed. Valuable for their accurate and often fairly detailed accounts of foreign peoples' look, social organization, and cultural properties, even these later sources do not reveal features of archaeological import. So, if any account of oral traditions connected with the crafts of the Northerners from around 2000 B.C. were to be expected in the Chinese histories, they would be silent as to forms. (An illuminating instance of this side of the matter is afforded in Karlgren's article: his attempt to identify the "*yüeh-t'i*"; see below, Class XV.) But in fact, the *Annals* do not even tell us much about a "high-culture" preceding that of the Shang in China itself; how much less should they with regard to

[21] G. Borovka, *Scythian Art* (New York 1928), p. 77 f.

[22] Tallgren, in *RLV*, xii, 66[b], s.v. Seima.

[23] Childe, *The Dawn of European Civilization* (third ed. London, 1939), p. 201.

[24] "Östliche Tier- und Tierkopfbilder in Schweden," *Mannus*, xxiv (1932).

Fig. 4. A: Small Shaft-ring Axe from Anyang. After Karlgren (ca. 3/8). B: Shaft-hole Axe, Minusinsk. After Merhart (ca. 3/8).

Fig. 5. Jannings Collection, Palace Museum, Peiping (ca. 1/5).

Fig. 6. A: Minusinsk. After F. R. Martin (ca. 1/3). B: Current Anyang Type (ca. 1/6).

Fig. 7. A: Tomsk. After Tallgren (ca. 1/2). B: Suiyüan. After Karlgren (ca. 1/4).

Fig. 8. Anyang Type: Broad Tanged Knife.

Fig. 9. Anyang. After W. C. White.

Fig. 10. Anyang. Museum of Far Eastern Antiquities, Stockholm. After Karlgren.

foreign formations. When Karlgren—after briefly surveying what Chinese books say about the nomadic neighbors in the north: Hsiung-nu, Hsien-yün, Hsün-yü (Hun-yü) (pp. 141–142)—states that "we cannot find from Chinese historical sources, any more than from Western sources, any *points d'appui* for a high-culture or political great power in the Northern regions in the time of the Yin dynasty," and that

"Kühn's theory, which would necessitate the assumption of such a high culture in the Siberian-Suiyüan steppe zone in the thirteenth century B.C., is thus historically indeterminable; it must be founded on archaeological facts alone,"

we may remain unimpressed; it is the negative result to be expected. The sources are not to be blamed. Rather we might ask whether or not it is justified to operate with a sham-answer, easily extracted from sources which owing to their nature would give no answer anyway. Two further remarks in this connection. Kühn's theory—counterparts to Anyang finds in the Steppe cannot be later than Anyang—does not imply or presuppose the existence of a "high-culture"; any metal-working tribe, nomadic or settled, no matter how civilized in comparison to the Shang, could have played the rôle of a contributor in this particular field. Secondly, archaeologically speaking, it is immaterial who the upholders of the Northern animal style had been. Whether those peoples whose remains we begin to collect and analyze were identical with the one or other described in ancient Chinese records is a problem apart. Karlgren's survey, alluded to above, does therefore not bear on the archaeological side. His treatment of the subject reminds me of a word of Wang Kuo-wei's in the introduction of one of his articles on the ancient Huns, where he says: "From the period of the *Spring and Autumn Annals* onwards, events recorded in the scriptures are tolerably comprehensive, while for the remote past (records) are rather watery, so that the scholars only know the names."[25]

ANYANG WEAPON TYPES

Karlgren divides the Anyang weapons he deals with into fourteen classes, adding the "moon foreheads" as the fifteenth. He correctly observes that for Northern parallels the provenience is unknown in many cases, and we therefore might be mistaken in ascribing them to the nomads (p. 123). He then goes on saying that he compares only unquestionable specimens from the nomadic regions with Anyang types, but irrespective of the age of the former:

"What we compare are the types, not the individual specimens" (p. 124).

The classification and inferences drawn from the so classified materials cannot possibly yield results of historical value.

We shall peruse and briefly comment on the various types, following Karlgren's order.

Class I. Spearheads. Karlgren refrains from comparing Anyang heads with Siberian ones, because Siberia is poor with regard to spearheads (p. 125, note). Although this is undeniably right, the fact remains that China's earliest types are well developed socketed types which cannot be understood without foregoing stages. Since socketed spearheads actually occur earlier in Siberia and Russia, and since these are of comparable design (not ornament), the question arises whether there were connections. The Chinese archaeologist Li Chi had declared that the spearheads came to China from the West.[26]

Class II. Socketed Celts. Karlgren does not even touch upon the question of the origins

[25] Wang Kuo-wei, *Kuan T'ang Chi Lin*, ch. 13: *Kuei-fang, K'un-i, Hsien-yün K'ao*, fol. 1 a-b.

[26] *Ts'ai Yüan-p'ei Anniv.*, i, p. 88; *Preliminary Report of Excavations at Anyang*, iv, p. 576.

of this type, but confines himself to the statement that "there are many practically identical counterparts to the Chinese celts with square section" (p. 124). It may be permitted to go somewhat into detail here to supplement this noncommittal observation.

The socketed celt is a genuine metal tool, not immediately derived from stone prototypes. Its precursors in the West – flat celts, winged celts, palstaves – have not been found in Siberia and China up to the present. With those typological precursors in view, it is unlikely that the same tool should have been invented in China *ad hoc*. On the other hand, not every socketed celt presupposes an evolution that would lower its date accordingly; socketed celts occur in Montelius' II, which apparently did not spring from winged celts.[27] Their date in Europe would therefore be older than Anyang. Conditions in Siberia, however, free us from theorizing. In the Andronovo period, the Seima celt appears in Minusinsk (fig. 3B), providing for a date probably not later than around 1500 B.C.,[28] and possibly earlier. This Seima celt is the typological ancestor of the socketed celt types in the Yenisei basin and farther east. The heavy Minusinsk local type with lateral loops and simple relief décor is characteristic of the Karasuk inventory – roughly parallel with Anyang. Derivatives of this type are current in North-China.

It is possible to trace back to Central-Russia, perhaps the Ukraine,[29] the Seima celt; in the East (Suiyüan, Ordos, N. China), only debased types with poorer ornamentation have become known (fig. 3D, E). It is not doubtful, therefore, that the tool came to Central Siberia from the West, and not from China. The fact that no socketed tools with Shang décor were ever found in Siberia agrees well with this. (The only possible exception is a group of celts from the Krasnoyarsk-Minusinsk-Irkutsk area with a pair of "eyes" on them, which might be interpreted as an impoverished reflection of a *t'ao-t'ieh* design.[30] But they are later than the pure Seima types and would therefore not contravene.)

Thus, Karlgren's second Yin tool points exactly to the same provenance as his first: Siberia – Russia. Once more it must be remembered that Li Chi, following C. G. Seligman, had accepted western origins for the socketed celt.[31] The association of the spearhead and the socketed celt in the Tomsk mould mentioned above (cf. n. 18) seems therefore singularly significant.

Class III. Small Shaft-Hole Axes with rectangular blades, wedge-shaped or flat and thin. Karlgren is ready to acknowledge similarities with Minusinsk types (fig. 4B), without pronouncing himself as to where priority should be sought (p. 124). The Chinese specimens, however, have something in common that is not found in Minusinsk: a round stud at the neck of the socket (fig. 4A). It is improbable that Minusinsk was the home of this type, which at the same time does not seem to be native to China.

Class IV. Axes with Widening Blades, with Shang and Chou décor; predominantly asymmetric. In Karlgren's description ("the tang – always square or rectangular – with or without shaft-hole" p. 103) we note a somewhat careless handling of the terminology, presumably due to haste; in the specimens chosen for illustration, some may be later than Shang-Yin (probably nos. 41–42, certainly no. 55). That no counterparts of the beautifully decorated axes of this category did ever appear in Siberia is a remarkable circumstance; it does not favor the assumption that the Early Bronze Age of the Steppe had its roots in China.

[27] *RLV*, i, p. 294.

[28] Cf. Tallgren, in *RLV*, xii, p. 70.

[29] Tallgren, in *ESA*, xi, pp. 45 f.

[30] Examples: Merhart, *Bronzezeit am Jenissei*, figs. 24, 26, 27.

[31] *Preliminary Report of Excavations at Anyang*, ii, p. 247; iv, p. 576. Cf. C. G. Seligman, "Bird-Chariots and Socketed Celts in Europe and China," *JRAI*, 1, pp. 153–158.

Class V. Archaic Dagger-Axe. A tanged type with broad triangular blade (fig. 5). It is relatively rare, and does not probably take us farther down than to the beginnings of the Chou. Unknown in the nomadic world.

Class VI. Dagger-Axe with Shaft-ring. Karlgren reproduces eighteen fine specimens of this type, to which he devotes a discussion (pp. 124–127). He compares the type (fig. 6B) to the very common Siberian pick (fig. 6A), as was done, as Karlgren says, by H. Shetelig[32] and M. Loehr.[33] The former's paper is not accessible to me; in the latter's, reference was made to axes with shaft-rings, not picks. The Siberian pick, however, is not only different from the Shang dagger-axe; it is also apparently later than these. Comparisons thus prove to be superfluous, and Karlgren is perfectly right when saying that the two types are "fundamentally and genetically different types of weapon . . . and cannot prove any historical connection between the Siberian and the Chinese culture" (p. 127).

More interesting is the question of the relation between the Chinese shaft-hole dagger-axes and some Siberian socketed dagger-axes, which have escaped Karlgren's attention. A piece such as the one from Tomsk (fig. 7A), published by Tallgren,[34] is so dissimilar to the Chinese types that it would be arbitrary to think of it as derived from them. At the same time, it has something in common with a Suiyüan specimen (fig. 7B) in Stockholm (Karlgren's no. 205, pl. 35): the shaft-tube, the ribs. Once more it appears as though the Suiyüan type is much more akin to the Siberian form than to the Chinese form (fig. 6B). It is quite correct to say—as does Karlgren—that this weapon type is extremely rare in the steppe; but how are we to account for the profound difference between the Chinese type and the Suiyüan type? If we were to assume with Karlgren that the Suiyüan type were derived from the Chinese—no far-fetched idea, with the multitude of Chinese examples as against a handful of Northern ones in mind—, the fact of a profound change in the close vicinity of the cradle remains unexplained. There is a problem here, avoided rather than approached in Karlgren's discussion, a problem which has to do with the shaft-tubes or long sockets in general. Pertinent long-socketed axe types are not contained in Karlgren's article; to describe and adequately illustrate them would require pages. Suffice it here to state that socketed dagger-axes, though rare, are not absent in Siberia (including *Minusinsk*) and are conspicuously different from the Chinese forms; tanged dagger-axes, on the other hand, seem to be unknown in Siberia as well as Suiyüan.

Classes VII, VIII, IX. Three varieties of the Chinese dagger-axe par excellence, the *ko*, the commonest of all the Chinese weapons. It is the tanged dagger-axe types of which we stated that they do not occur in Siberia. As Karlgren deals with them at some length at the end of his paper, I shall arrange myself accordingly and revert to them later.

Class X. Tanged Knives of Shang Style. The broad-bladed knife with upcurved tip, often of large dimensions and elaborately decorated (fig. 8 gives the silhouette), has "no counterpart in the Nomad art" (pp. 127–128).

This correct statement is preceded by the remark that it is very difficult to compare Yin knives with the knives of the nomads, because the Anyang treasure hunters

> have taken little interest in the ordinary, simple, everyday knives which have no value as *ku-tung* "curios." Hence only the big and more spectacular ritual knives have come on the market, the simpler artifacts that are bound to have come to light have been thrown away as valueless (p. 127).

[32] "Vaaben og Redskaber fra Kinas Bronzealder," *Westlandske Kunstindustrimuseums Aarbog* (1917).

[33] "Beiträge zur Chronologie der älteren chinesischen Bronzen," *Ostasiatische Zeitschrift*, xii (1936).

[34] *Coll. Torostine*, p. 50, fig. 50; " 'Svärdstavar' fran Ural och Sibirien," *Finskt Museum*, xxii (1915), pp. 96 ff., fig. 4.

I cannot share this view entirely. In China, nothing is thrown away. In the Peking market, there appear innumerable small finds of even far less value than that of an Anyang knife (pottery fragments of all ages; small fittings; bronze bits; things of bone and shell; tiny fragments of oracle bones; fragments of every description). One must not think of knives being discarded, which fetch a higher price than the archaeological bric-à-brac just mentioned. Moreover, why should knives from the Ordos desert, Suiyüan, Shansi, Shensi – including miserable specimens – continue to pour in while Anyang knives do not?

Class XI. Knives with Ring-Pommels. Karlgren's contribution to our knowledge of ring-headed Anyang knives by publishing fourteen new pieces is considerable. Not underrating the imposing rôle this knife type plays in Siberia, he only points out that one Chinese variant with a broad blade (fig. 9) does not occur among the Nomad knives (p. 128). It is the form which comes close to that of the broad tanged knives of Class X (fig. 8). The other forms are represented in almost countless specimens from Suiyüan and Minusinsk.

Regarding the broad-bladed type, the inference may not be that the Shang are thereby shown to have been independent of the Nomads as far as knives quite generally are concerned, but that this special type was developed in the Shang domain. For why should the Nomads – had they been the takers – have avoided imitating just this special type? On the whole, the tremendous numerical superiority as well as an amazing diversity of the Nomad knives suggests unmistakably where their origins should be sought.

Class XII. Knives with Jingle-Heads. Admitting that the jingle-head knife "is a typical Nomad art feature" (p. 128), Karlgren depicts a choice Anyang specimen of the Stockholm Museum (no. 173; our fig. 10) and several analogous types from the Steppe, two of which are also in the Stockholm Museum (nos. 216,217). By virtue of the jingle-terminals, Class XV is closely allied to this knife group. It would therefore be an urgent task to investigate the origins of these jingles or rattles, which in my opinion were first made by smiths, and only later by casters. An answer to this question would bear on the problem of Class XV too.

Classes XIII–XIV. Knives and Daggers with Animal-Heads. There are three hitherto unknown specimens from Anyang reproduced (nos. 174 and 180: Stockholm; no. 175: Academia Sinica), among which is a fragment with the head of an ibex – strangely resembling a horse's head – with transversely striated horns and a small bird in profile sitting on the neck (the back of the handle), a bird which is of the same style as in Anyang jades, bone carvings, or bronzes. A knife so ornate certainly was no common tool. What Karlgren calls "ritual art" and "lay art" unite here in one object, which thus shows – as do a few others – that Karlgren's theory is not consistent with regard to actual specimens.

We have treated above the question of the animal style knives, and need not go into detail here. It may be noted that the two daggers nos. 182 and 183 do not belong to the group of which "a fresh naturalism" is characteristic, even though they were found at Anyang: they show conventionalized, even debased trebled heads, scarcely in the round, in one case; doubled heads likewise schematic, in the other case. The blade forms point to a relatively early date (Western Chou), but the two pieces cannot be taken into account as representative of the "Anyang animal style"; they are un-Chinese.

By mistake, two specimens are reproduced twice:

fig. 229 (photo) is identical with fig. 233 (drawing);

fig. 240 (large) is identical with fig. 243 (smaller).

Class XV. "Moon-shaped Frontlets" (fig. 11). Reviewing previous writers' opinions on this enigmatic object, Karlgren (p. 112) decides himself in favor of that of Li Kuang-t'ing, a nineteenth century scholar, who explained it as a "horse's forehead jingle." Karlgren

further refers to a passage in *Chuangtse* speaking of the horse's reaction on being harnessed with the yoke and the *yüeh-t'i* "moon forehead." Karlgren thinks that this is an excellent name for the object, "the central part of which has the shape of the moon crescent." Nearly a thousand years had passed since the foundation of the Yin residence, when that passage was written. To use it to elucidate the type in question is a risky enterprise. Besides, I confess I fail to see the crescent. Strictly speaking, the object is no frontlet either. Something that would slightly better correspond to a "moon frontlet," a real horse frontlet, is contained in *Shina Koki Zukō*,[35] a piece excavated at Lo-lang in Korea (fig. 12); the type is tentatively dated in the pre-Ch'in period, say fourth to third centuries B.C., by Harada and Komai. This date roughly coincides with that of *Chuangtse*.

The Anyang pieces in question have parallels in Minusinsk, poorly executed by comparison. *A propos* of a pertinent specimen in the Tovostine Collection, Tallgren—rejecting Tovostine's view that it was perhaps a Shaman's drumstick—inclined to regard it as an adornment of the quiver.[36] His belief was strengthened by grave finds from Tomsk and Tagarskoye; in Tagarskoye, the object actually was associated with arrows and vestiges of an arrow-case (*Otchet* 1894; Tomsk: *Otchet* 1889). In Anyang, these objects were met in similar context. In richly equipped chariot and horse burials, they were in places not permitting of connecting them with the horses, and the Chinese archaeologists now interpret them as bow ornaments.[37] We thus are led into the same direction as that in which Tallgren had looked for an explanation. Final evidence, however, is not yet afforded by the Anyang excavations.

As to the age of this bow-shaped object in Minusinsk, we certainly are taken farther down than Karasuk (contents of the Tagarskoye tomb). Tallgren had thought of connections with China, and Karlgren fully endorses his view (p. 129). If this is so, this type—of all the types which Anyang has in common with the Steppe—is the only one where there is clear proof of Anyang's chronological priority. This seems an interesting factor, which must not be overlooked in dealing with Sino-Siberian relations.

CONCERNING THE ANYANG DAGGER-AXES

The last subject to occupy us are the Chinese dagger-axes, which Karlgren comprises in his Classes VI–IX. They are illustrated here for the reader's convenience (figs. 13 A,B,C,D),

[35] Y. Harada and K. Komai, *Shina Koki Zukō*, (*Chinese Antiquities*) Pt. 2 (Tokyo, 1937), pl. 41, 2. For real horse-frontlets of earlier style, see *ibid.*, pls. 39, 40.

[36] *Coll. Tovostine*, pp. 52–53.

[37] Cf. "Shih Chang-ju," in *Chung-kuo K'ao-ku Hsüeh-pao* (*Chinese Journal of Archaeology*), ii (1947), figs. 5–6, pp. 18, 23.

FIGS. 11–18

FIG. 11. Anyang. Royal Ontario Museum, Toronto. After White.

FIG. 12. Horse Frontlet, from Korea. After Harada and Komai.

FIG. 13. Anyang Dagger-axe Types. A: Class VI. B: Class VII. C: Class VIII. D: Class IX. (Approximately 1/7–1/8).

FIG. 14. Hopei, Stone. Museum of Far Eastern Antiquities, Stockholm. After Karlgren.

FIG. 15. Hopei. Museum of Far Eastern Antiquities, Stockholm. After Karlgren (Approximately 1/5).

FIG. 16. Anyang. Stockholm Museum. After Karlgren (ca. 3/11).

FIG. 17. Anyang. Stockholm Museum. After Karlgren (ca. 1/5).

FIG. 18. Various Types of Dagger-axe Butts, Shang and Chou (Not to Scale).

FIG. 11

FIG. 12

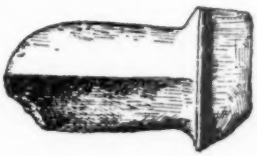

FIG. 14

FIG. 15

FIG. 16

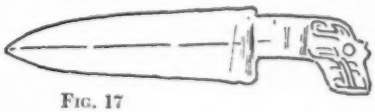

FIG. 17

FIG. 13

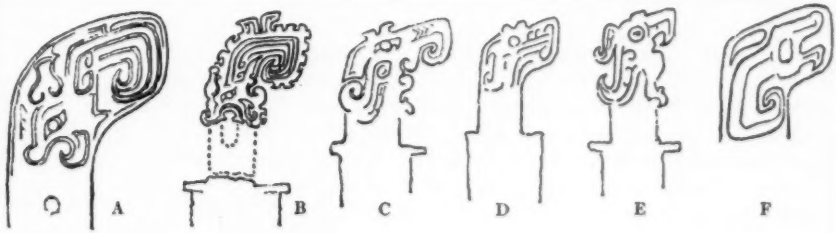

FIG. 18

FIGS. 11–18

Karlgren (p. 132): "There is one fundamentally important phenomenon that has long been overlooked, but which has a bearing on our problem: the weapons in Classes VI, VII, VIII, and IX exist exclusively as axes (shafted), never as real daggers (without shaft)."

This sounds like a discovery; in fact, it is a truism. Occasionally, in inexpert descriptions, the term "dagger" may have crept in; no serious observer ever was misled through such a mistake, and there are enough examples of proper treatment of the mode of hafting scattered in Chinese, Japanese, and Western works. I know of no instance where these weapons actually were claimed to represent daggers and not halberds and the like.

Karlgren further turns against the term "dagger-axe," condescending that it is true as a description, "but not genetically, in the sense that a primarily existing dagger (unshafted) has secondarily been provided with a shaft, turning it into an axe . . . " etc. (p. 132); he proves that his (artificial and slightly tasteless) supposition is extremely unlikely, and finally assures us that the dagger-axes were never daggers. This is exactly what is conveyed by the *termini technici*, dagger-axe, *Stabdolch*, or *hache-poignard*, generally adopted terms which do not require to be analyzed.

As to the question whether the broad triangular blades of Class V are the forerunners of the more slender blades of Class VII (fig. 13B), Karlgren's view is that "purely typological speculations based on shapes that co-exist in Anyang are really futile; we need knowledge of some pre-Anyang material before we can decide the question" (p. 133). I wonder whether any pre-Anyang material would ever be recognized as such, if we were to wait, as Karlgren recommends, for the final revelation. To-day, we dispose of pre-Chou finds from Anyang, and still are unable to decide on what is late Shang and what is early Chou. Typological study—not speculation—has therefore rather to be much more intensified; otherwise, even the pre-Anyang stage would presumably cause disappointment. Karlgren did not trouble himself with typology, but I readily admit that the relation between Class V and Classes VII–VIII is a vexed problem. Class V, which does not survive the earlier Western Chou period, is rightly taken as an archaic type (W. P. Yetts; S. Umehara). Its origins, however, are not hitherto traceable while its more slender forms converge with the early *ko* types of Class VII.

Another origin of the *ko* (Class VII) is conceived by Karlgren. He thinks it derived from stone prototypes, the existence of which he takes for granted on account of one relevant stone specimen from Hopei Province, acquired by J. G. Andersson (fig. 14). Andersson had suggested that it should be understood as a precursor of the metal dagger-axes,[38] and Karlgren strongly advocates the same idea. (p. 133). He holds that "we here have the nucleus, the primitive beginnings of the parts of axe VII (fig. 13B): the blade, the lugs, the tang." The crest of the blade and the trim of the base, however, clearly point to metal prototypes, and it was perfectly logical therefore when C. W. Bishop and H. G. Creel considered the specimen to be a reproduction in stone of a metal form. With some sophistry, Karlgren states, it is true, that Bishop and Creel cannot show "a single bronze instance which could form the pattern of this stone axe and so their conclusion hangs entirely in the air" (p. 133). Of course they cannot: a metal tool so clumsy, aping features of untractability and heaviness grown from stone's structure, is not imaginable. Has ever a metal reproduction imitating the flaked surface of a silex dagger imitating metal prototypes become known? Where are the archetypes (in stone) of the stray Hopei find? How does Karlgren's hypothesis agree with the fact that the most archaic metal dagger-axes have no lugs but shoulder slits? Where are parallels to the particular treatment—foreign to genuine stone tools—of the prolonged

[38] "An Early Chinese Culture," *Bull. Geol. Survey*, v (1923), p. 10, pl. v: 1 a–b, fig. 2 a.

base? How are we to explain the fact that the many dagger-axe blades of marble and jade found at Anyang never show relationship with the supposed stone prototype from Hopei, but invaryingly are most akin to the coeval metal types? Why should a stone axe suddenly have been provided with a base processing beyond the width of the blade "to affix the shaft securely," since slender-butted or even pointed-butted stone axes had been securely fastened to their hafts, by means of sleeves or otherwise, since times immemorial? Viewed from whatever point, Karlgren's hypothesis proves to be at variance with facts.

Consequently, the following four conclusions drawn by Karlgren are far from valid:

(1) That Classes VI and VII (figs. 13 A, B) are descendants of a Stone Age type and therefore autochthonous;

(2) that Type VII (with tang) is older than Type VI (with shaft-ring);

(3) that the lugs have "grown out organically" in a stone type;

(4) that the slender-bladed Types VI and VII "do not derive from the broader axe in Class V (pp. 134–135).

Regarding these four conclusions, some remarks may be added.

(1) Autochthony of the Chinese dagger-axe is rather bespoken by their rarity outside of China. It is, on the other hand, worthy of note that the Chinese neolithic sites excavated thus far have not yielded tools that would permit of tracing the type back to a pre-metallic age. Likewise, we have no stray finds of such tools – with the sole exception of Andersson's stone *ko* from Hopei which presupposes knowledge of metal-work. Thus, for the time being, China's most characteristic Bronze Age weapon, the dagger-axe, seems to appear "suddenly" in the early metal age.

(2) If the shaft-ring or shaft-hole was really an improvement, as Karlgren thinks (p. 134), how is the fact to be accounted for that this contrivance was to become obliterated as early as around the end of the Shang dynasty? Blades with rings (short sockets) and blades with tangs existed side by side perhaps throughout the Shang period, and the tanged blades survived while the "improved" ones were ousted.

I feel tempted to think that the shaft-ring types were even older than the tanged ones, that they, in other words, were derived from shaft-tube types such as occur in Siberia (fig. 7A) and North-China (fig. 7B). This new hypothesis would be more in line with the later developments in China itself, and be supported by the typology of the early shapes. It would not have to struggle with the fact that the Northern types have no tangs but exclusively sockets. The weak point in this hypothesis is the rarity of the dagger-axe in the Northern orb.

The question of the broad-bladed, triangular *k'uei*, Class V, must be touched upon in this connection. Since they are early and next to unknown among the Northerners, it might seem as though it were they which represented the autochthonous element. There is, however, an erratic pertinent type with broad blade and shaft-ring there (fig. 15), a piece from southern Hopei, in the Museum of Far Eastern Antiquities in Stockholm (Karlgren's fig. 249). Like fig. 7B, it shows that the triangular blade form was nothing entirely foreign to the Northerners. The autochthonously Chinese element, therefore, may rather be seen in the tangs, which actually appear to be absent outside unquestionably Chinese (Shang or Chou) materials.

(3) "If we were to assume – against what was said above," Karlgren says, "that a primitive dagger (as yet unknown to us) was the prototype of axe VII (fig. 13B), it would be tempting to conclude that the lugs of this class were a reminiscence of a dagger guard" (p. 134). Unless by mistake, there is no reason for the assumption that a true dagger gave

rise to the dagger-axe of Shang pattern: nor has any writer felt tempted to give an explanation so unsound as that mentioned by Karlgren.

(4) Generally speaking, triangular blades are metal forms. There is a connection between Class V and Class VII, though we are not able yet to define it historically. It is probable that typological series will be established showing the dependence of the slender blades (VII) on the broad triangular ones (V). This dependence once established will rule out definitely the rôle of the stone *ko* (fig. 14) as a prototype of Class VII.

Class IX. We are faced by the following theory:

> . . . here we have a long and beautifully shaped tang that really gives a clear impression of being a handle. The axe is "dagger-like" insofar that it is double-edged. But in spite of this it is not a dagger that the shape of our axe recalls to mind and causes us to expect for a prototype, but a knife.
>
> . . . Why do we not find, in the Anyang material, the independent knife which is the prototype of the axe IX? The answer is simple: we do find it, but we find it where we did not expect it: in the knives in Nomad Animal style of Class XIII! (p. 135).

The theory is illustrated by the following specimens: a knife (fig. 16) (Karlgren's fig. 174 – not 175 as given in the text, p. 136) and a *ko* (fig. 17, Karlgren's no. 118): "In short, the axe 118 is a translation and simultaneously a corruption of the knife 175" (no. 174) (p. 136).

The conception here set forth is so absurd that there is hardly any danger that it will be taken seriously by competent students. It might, however, be accepted by those who are not specialists and are not aware of uncritical and misleading information from the side of a scholar of Prof. Karlgren's standing. I do not propose to comment on all the erroneous suppositions and conclusions which make the text of Karlgren's paragraph on Class IX (pp. 135–139), but wish to elucidate some points.

(1) The knife type no. 174 (fig. 16), Karlgren says, was altered into an axe which took over some characteristics of Class VII: double edges and lugs (p. 137); the product, the *ko* no. 118 (fig. 17), he says, still clearly shows the head of a quadruped. I suppose that this amazing assertion is founded on the circumstance that the drooping butt of the *ko* has an excrescence which could be likened to the ears of the animal head on the knife. As to the rest, only the presence of an "eye" permits of taking as some kind of animal ornament the outspokenly unclear linear design on the butt. This design can be interpreted only by comparison with less unclear analogues, such as fig. 18C (Karlgren's no. 122). The latter shows a monstrous being with a huge curled beak, an eye, an excrescence above the eye, foot and claws, and a body that ends in a convolute spiral. It is likely that the bird-like monster was developed from a design such as shown in fig. 18B: a coiled dragon with bottle-shaped horns, its head turned toward the blade, its back provided with the same excrescence as seen in the other forms. The general outline favors this assumption, and the coiled body accounts satisfactorily for the curled "beak," while there is no evidence for the reason why the head was shifted. Now, this dragon design certainly is based on simpler figurations without the excrescence, such as fig. 18A (Karlgren's no. 133). We thus arrive at the simple drooping rounded butt as the probable starting point, in accordance with S. Umehara who as early as 1933 had contemplated the same evolutionary trend.[39] The bird-likeness of the monster (fig. 18C) eventually led to an unambiguous bird-design retaining essential features of the

[39] *Shina Kodō Seika*, vii, text, "On the Chinese Bronze Age," chapter 3; German translation in *OZ*, xii (1936); first published in *Shirin*, xix.3, xx.2, xx.4; contained in Umehara's *Shina Kōkogaku Ronkō*, pp. 120–189. Cf. also Umehara's article "Note on Bronze Tools and Weapons in China," in *Tohō Gakuhō*, Kyoto No. ii (1931), pp. 85–138, especially pls. 11, 12; contained in *Shina Kōkogaku Ronkō*, pp. 15–74.

monster (fig. 18E). With these forms in view, the debased and impoverished character of the motif in fig. 18D (Karlgren's "quadruped's head") becomes apparent. There is a similar but even poorer example adduced in Umehara's book,[40] a thin-bladed specimen of an alloy containing lead instead of tin, and giving a hint of how to classify the pertinent types. As to the bird-design, Karlgren adapts himself by the remark that the "quadruped's head of 174 and 118 is transformed into a bird-like head (dragon's head)" (p. 137). Doing so, he implicitly abandons his formerly defended view of evolutionary principles.[41]

(2) The development of the bird-figure presupposes the simple drooping butt. It was a development apart, confined to ceremonial or funerary weapons of debased design and fragile build,[42] and in all probability cannot be reversed. Karlgren is once more mistaken, therefore, when he imagines that "some further and much more violent modifications gradually took place," starting from the monstrous design which gave rise to the bird-motif (or at least was changed into a bird-motif), and heading toward the drooping tang of Class IX. He does not hesitate to declare that "these vehement transformations cannot have taken place in the course of a few years, nor even in a few decades; they have required centuries" (p. 139).

The inference drawn from all this is, that the supposed ancestor of Class IX, the animal-head knife, must be placed early in the Anyang period; the Class IX, correspondingly late. In support of his belief, Karlgren argues that the blades of Class IX are "to a large extent thin, sometimes very thin" (p. 136). This argument is without foundation. Class IX dagger-axes are, generally speaking, as sturdy as those of Class VII; thinness is found in the monster- and bird-axes serving ceremonial purposes. The axes of Class IX, moreover, are associated with the animal-head knife type[43] which, according to Karlgren, should be separated from them by an evolution requiring centuries. Their association shows them to be coeval. Finally, the butt décor of Karlgren's dagger-axe from Loyang no. 189 (fig. 18F) does not exhibit any resemblance to the plastic animal-head in fig. 16, as Karlgren pretends it does (p. 137).

What Karlgren, on no better grounds than his evolutionary theories, tries to establish is the high date of the animal-head pommels in Anyang. One cannot but remember that he dogmatizes *à propos* of the chronology conceived by Teploukhov on the basis of his expert Minusinsk typology. Karlgren's interpretations struggle with facts, and what he calls an "important conclusion" is valueless. We have no safe means as yet to ascribe an exact date to the animal-head knives from Anyang, but only can say that they are from 1300 B.C., at the earliest.

The "important conclusion" of Karlgren refers to his chronological scheme of the Sino-Siberian relations. It is as follows (p. 143):

> Ca. 1300 B.C. Animal style artifacts in Anyang: Knives and daggers (XIII, XIV), ring-pommel knives (XI), jingle-knives (XII), axes (III), "horse-frontlets" (XV).

[40] *Shina Kodō Seika*, vii, text, chapter 9 = *Ronkō*, p. 174, fig. 40, 2. Blades of the same kind are reproduced in *Prel. Rep. Excav. Anyang*, iii, pl. VI: 2–5.

[41] Cf. B. Karlgren, "New Studies on Chinese Bronzes," *BMFEA*, ix (1937), p. 77. The most obvious weakness in Karlgren's so-called A and B styles is that they do not permit of connecting organically (or, historically) the Early Chou ornament with that of the Late Western Chou period ("Middle Chou"), which therefore, without foundation, was interpreted as something revolutionary.

[42] The blades of the design such as referred to in note 40 above are evenly thin and unfit for practical use; since they are, in general, of poor workmanship at that, the assumption that they served as funerary gifts, *ming-ch'i*, seems well justified.

[43] *Op. cit.*, n. 37, p. 19, fig. 5.

Ca. 1100 B.C. These types begin to appear in the Ordos-Suiyüan-Mongolian area.
Ca. 800 B.C. They reached the Yenisei region.
Ca. 500 B.C. Only, some more "successful types," i.e. animal-head terminals, reached Scythia.

In this neat scheme, however, the Siberian dates are kept low because (as shown above) Karlgren has confounded "Karasuk" and "Scythian," and because the early metal cultures of Siberia are not taken into account at all. With due regard to these latter, and with the pre-Scythian animal style appearances in mind, the chart would look different:

Third millennium Post-Mesolithic realistic animal carvings in Northern Eurasia.
Around 2000 B.C. Afanasieva Culture in Minusinsk; aeneolithic stage.
Around 1700 B.C. Seima Culture in Central Russia; animal-head terminals (elk-heads) on daggers.
Aorund 1600 B.C. Seima-Andronovo in Minusinsk; Early Bronze Age of Siberia. Close relations with Seima.
Around 1400 B.C. or somewhat later: the Karasuk Stage in Minusinsk. Animal style artifacts related to Mesolithic survivals.
Around 1300 B.C. Anyang; influences from the North, carrying animal style elements.

TSINGH UNIVERSITY MAX LOEHR

FIFTIETH GENERAL MEETING OF THE ARCHAEOLOGICAL INSTITUTE OF AMERICA

IN CONJUNCTION WITH THE AMERICAN PHILOLOGICAL ASSOCIATION IN THE SHERATON HOTEL, ST. LOUIS, MISSOURI

SUMMARIES OF PAPERS PRESENTED BY AUTHORS

THE FARWELL COLLECTION: *Franklin P. Johnson*, University of Chicago. (This paper will be published, *AJA*, liii, 3.)

EXCAVATIONS IN THE ATHENIAN AGORA, 1948: *Homer A. Thompson*, The Institute for Advanced Study.

During the campaign of 1948, excavation was concentrated on the area west of the Areopagus where it was hoped to set the permanent Agora Museum. The discoveries were embarrassingly rich. The upper stretch of the Great Drain, which drew the overflow toward the floor of the Areopagus and the Hill of the Nymphs, was traced through its complex history, together with the roads which followed its course. On either side buildings lay thickly upon each other, beginning in the late 6th century with bits of house walls, developing to sizable well-preserved houses of the 5th century. This residential area was originally modest, evidently for craftsmen who made bronzes, stone sculpture, and terracottas in their small courts. By late Roman times, the houses resembled villas in their large size and handsome decoration in mosaic floors and brilliant wall-painting. The latest houses were, to judge from a hoard of burned coins in one of them, destroyed by the Herulians in A.D. 267.

Only one building in this area, directly at the foot of the Areopagus, could be interpreted as public. It is a long trapezoidal structure built of soft poros, uncovered last year. Its career was brief, but its probable 5th century date and peculiar plan made it too important to be destroyed. It becomes clear that these houses and this interesting building must be preserved and a new site found for the Museum. The reconstruction of the Stoa of Attalos has been proposed for this and plans are now being prepared.

Many interesting incidental finds, such as a rich grave of the early Geometric period, some Roman busts, and minor objects, were noted. Chief among them was a torso of Parian marble representing a young man standing in a Polycleitan pose, obviously an original Attic piece of ca. 440 B.C. Its unusual weathering, size and character, together with its similarity to a part of a reclining torso previously found, make the assignment of these two figures to the East pediment of the Hephaisteion more than probable. Other pieces long in the Agora Museum, the "Nereid" and the Ephedrismos also bear close technical resemblances to these two torsoes and to the friezes of the temple itself. They have therefore been assigned as akroteria to the East Gable and a tentative restoration drawn up.

A fuller report on the 1948 campaign will appear in *Hesperia*, xviii, 2.

TWO LEKYTHOI BY THE PAN PAINTER: *Dietrich von Bothmer*, Metropolitan Museum of Art. (No summary was submitted.)

NEW MYCENAEAN FIGURINES AND VASES: *David M. Robinson*, University of Mississippi.

A hoard of five Late Helladic or Mycenaean vases and ten terra cotta statuettes, which were said by the European dealer through whom they came to the Robinson Collection at the University of Mississippi, to have been found in a tomb on Salamis, was exhibited and explained with slides, colored reproductions by Miss Millicent Meritt, and discussion. The hoard includes a one-handled small cyathus, a cylindrical tankard or feeding-cup of the Vaphio shape, a stirrup vase, a three-handled jar with a heart-shaped design, and expecially one of the most beautiful Late Helladic II ewers ever found, with long beak and a plastic ring about the neck, decorated

in bright red on light buff with a trefold nautilus design. There are some dozen other such vases known (e.g. Blegen, *Korakou*, pl. v.), mostly from Thebes, Attica, Aegina, Corinth, but two or three from Crete, such as that found by Seager at Pseira, or that in the New York Historical Society (from the Abbott Collection of Egyptian antiquities) now on exhibit at the Metropolitan Museum. Though found in Egypt, it is surely a Cretan importation. The origin of the bird's beak spout is considered to be Hittite, but Early Helladic and Middle Minoan examples were cited to show that that theory is not certain. Along with the vases were exhibited ten little statuettes of peculiar charm, striped with bright red or brown glaze. Seven have disk-shaped bodies, and three have two crescent-shaped projections instead of arms, which point upwards like the horns of a moon sickle. Some are solid, others hollow. These figurines wear two garments, a bodice of fine fabric, and a skirt of heavy cloth, with a belt or sash around the middle. They are not representatives of Hera, the moon-goddess, as Schliemann believed, but lovely lively ladies of leisure at Mycenae or Salamis or elsewhere. They are found in the tombs and houses of the poorer people without jewelry. They may have been in some cases, as Nilsson thinks, symbolical representations of actual nurses to care for the children in the next world, or playthings; but since many were not found in children's graves, I prefer to believe that they were a general type, and anyone who could not afford jewelry, could furnish these cheap substitutes which might help procure a luxurious after-life for one who had known only want and work in this life.

COSA, AN EXPLORATION: *Frank E. Brown*, School of Classical Studies of the American Academy in Rome. (No summary was submitted.)

THE HOUSE OF TRIMALCHIO: *Gilbert Bagnani*, University of Toronto. (No summary was submitted.)

A ROMAN TOWN IN EGYPT: *Louise A. Shier*, University of Michigan.

The paper is based on an exhibit arranged in the spring of 1947 by the Museum of Archaeology at the University of Michigan to give a picture of life in an Egyptian town under Roman rule. Much of the material came from the University of Michigan Excavations at Karanis in the Fayoum, or from sites nearby. In the exhibit, objects of everyday life found in the streets and houses of Karanis were used to illustrate the written records from that town and other towns of Roman Egypt.

Papyrus documents showed records of births and deaths, of the leasing and selling of houses and land, of contracts for work and marriage settlements. They showed the taxes which touched everything. Toys and school exercises gave glimpses of the lives of the children. The industry of their elders survived in the farm tools, in the harnesses for the animals, in the rope and basket work, in the work of the potters and glass blowers, the carpenters and other craftsmen.

The exhibit was the result of the joint efforts of the staff with the invaluable cooperation and assistance of Dr. Elinor Husselman, Curator of Manuscripts in the University Library.

INVESTIGATIONS AT CORINTH, 1947–1948: *Saul S. Weinberg*, University of Missouri. (This paper is published in *Hesperia*, xviii, 1949, 1.)

MEASUREMENTS AND REFNEMENTS OF THE SOUTH STOA AT CORINTH: *Oscar Broneer*, The University of Chicago.

The South Stoa at Corinth measures 164.47 m. in length on the stylobate. This was probably intended as the equivalent of 500 feet. The exact length of the foot on this measurement would be 0.3289, or slightly more than the Attic-Aiginetan foot.

Though much of the stylobate is missing it has been possible to ascertain that the South Stoa had a regular curvature, measured both on the front foundations and on the toichobate of the front wall of the shops. The total rise amounts to ca. 15 cm. on a length of nearly 165 m., or less than 1:1000. This is considerably less than the curvature of the Parthenon. On the short axis of the South Stoa the curvature has approximately the same ratio to the length of the wall. The front foundation, which was laid in a deep trench, is of uniform thickness in any given course, showing that the curvature was made in the cutting of the trench itself.

By actual experiments on a large scale plan of the Stoa it was discovered that the curvature co-

incides with that of a string attached at both ends and allowed to sag in the center. The theory is thus put forth, substantiated by these experiments, that the ancient architects obtained the required curvature by the simple method of stretching a string between the extremities of the building and permitting the center to sag to the desired amount. By merely inverting the curve thus obtained, a uniform convex curvature would result. The entasis of the columns could be laid out in the same way. It is possible that in a building of such large size as that of the South Stoa, the curvature was laid out on a reduced scale, and expanded on the building itself.

The much debated question whether the curvature in ancient buildings is to be regarded as an arc of a circle or a parabola has thus found a new solution. It is neither. It is in essence a catenary, which in a curve as slight as this would be indistinguishable from a parabola.

THE GREEK THEATRE AT CORINTH: *Richard Stillwell*, Princeton University.

During the investigations carried out in the spring and summer of 1948 in order to prepare the final publication of the theatre a number of new features came to light. The lateral extent of the Greek stage building was established by the discovery of a portion of its east wall, still in place behind the foundations of the Roman stage. No traces of paraskenia appeared, and it is certain that the skene was of the same length as the proskenion. The presence of a stairway, at the east end of the building, was also established. This gave access from the hyposkenion to the upper part of the building and, presumably to the roof. At either end of the proskenion was a flight of Charonian stairs which emerged from beneath the colonnade of the proskenion and terminated at either side of the orchestra. The original Greek cavea, with its seats, was carefully studied, and belongs to a period considerably earlier than the gutter, orchestra circle and skene complex. Trial soundings beneath the level of the original seats showed that this part of the theatre may be dated as early as the end of the fifth century, and almost certainly not later than the early years of the fourth, whereas the period of remodelling, with which the present orchestra circle and skene are associated may most probably be assigned to the third century of our era. In connection with the cavea a careful control of the survey showed that it had been laid out with a single center, and not, as at Epidauros, with three: a feature which accords well with the early date.

Several Greek seat blocks bearing parts of an inscription similar to one which had been discovered in 1928 also came to light. The longest of these bears the letters ΙΣΤΙΑΙΩΤΟΝ; the others have at most four letters since they have been cut in half. All were re-used in foundations of the Roman seats or the parodoi.

GEOMETRIC PLATFORM BRONZES: *D. A. Amyx*, University of California.

Investigation of this subject was prompted by a small bronze horse of geometric style in the Museum of Anthropology at Berkeley (UCMA 8/74). The Berkeley horse was bought in England and is of unknown provenience, but it clearly belongs to the familiar class found in excavations throughout southern and western Greece. In this piece, as in many others of the group, the platform base on which the figure stands is rectangular with a narrow spur at the back to which the tail is joined, and it is decorated with rows of alternately reversed triangular perforations. The horse resembles most closely two others with similar bases, found at Delphi (*F.d.D.* v, p. 46, fig. 138) and Olympia (*AA*, 1928, 430, fig. 144), but the likeness is not strong enough to indicate a distinct stylistic unity. Variety in numerous minor details is indeed a common characteristic of the class as a whole.

Small bronze figures on platform bases are an important part of the extant body of Greek sculpture made during the Geometric period. The class not only includes individual horses, but other animals, and groups (and some human figures) as well. Because of their number and variety, and because of their presence in stratified levels of numerous excavations, they should provide valuable clues to the chronology and classification of Geometric bronzes in general. Good beginnings have already been made in this direction, but much remains to be done. Pending further study, these questions will be passed over briefly here.

As a preliminary observation, however, it may be pointed out that there are overwhelming arguments against dating any of the platform bronzes before about 800 B.C. As Payne has noted, the

context in which they have been found is without exception very late Geometric: often they are found with Protocorinthian pottery. Again, several examples with solid platforms are decorated underneath with Orientalizing motives, and in some cases the figures themselves are suggestive of Orientalizing tendencies. One horse bears an inscription, a fact which is inconsistent with a date earlier than the eighth century. The conclusion seems inescapable that all of the platform bronzes were made after 800 B.C., most of them probably after 750 B.C. Production seems to have stopped suddenly at the end of the Geometric period, around 700 B.C.

This narrow chronological range, extending not much more than half a century, has further implications which seem to be borne out by the material. Instead of an orderly sequence of types, limited in number and conveniently datable from their style, we should look rather for a variety of styles prevailing simultaneously at different places. It is to be expected that the stylistic subdivisions will prove to be fairly numerous, with somewhat complicated interrelationships: there are at least two separate types found at Perachora; two at Sparta; and several at Olympia. Furthermore, although some of these styles appear to be distinctively local, it is still difficult if not impossible in most instances to specify the locality in which a given example was made. There is, however, reason to hope that further progress can be made toward solving these problems, provided the danger of oversimplification is avoided.

One of the most interesting features of the platform bronzes is the base, which is regularly decorated with perforations or designs in relief, or both. Speculations as to the use for which they were intended must account for this decoration. The old theory, which still has its adherents, is that they were simply votive offerings, embellished underneath because they were hung in trees of the sacred precinct and their bottoms were therefore conspicuously visible. (An objection immediately comes to mind, that if they were meant to be suspended there would be no reason for providing them with platforms.) The other explanation, more widely supported in recent years, is that they were made to be used as stamp-seals, with zoomorphic handles. The evidence seems on the whole to favor this latter theory.

Neugebauer opposes the stamp-seal theory (*Berlin Cat.*, p. 7, note 2) because of (1) the fact that these objects have been found chiefly in temple areas; (2) the size of the objects; and (3) the lack of variety in their decorative patterns. But his objections can be readily answered. Although most examples have been found in sacred shrines, and therefore must have served as offerings, this fact does not preclude the possibility of their previous secular use, any more than it does for (e.g.) fibulae. Nor must it be supposed, even if some were made expressly to be offered as dedications, that all were made exclusively for that purpose. An easier supposition is that as objects of use they were first dedicated to the god, afterwards becoming traditionally acceptable as a kind of offering which could be produced for just that purpose (as in the case of gold and silver vessels in later temple treasuries). The largest of the platform bronzes may then, if they seem altogether too unwieldy or otherwise unsuitable for seals, be elaborate versions made purposely for dedication. Most of the bronzes in question, however, are not impossibly large for seals: they are usually only two or three inches long, and some are even smaller.

As to Neugebauer's third objection, there is on the contrary a remarkably wide variety of patterns. Even closely similar designs have differences in the size and shape of the field which would make each impression unique. Nor, indeed is repetition of pattern at all uncommon in other classes of objects which are generally acknowledged to be seals. Some of the solid platforms, too, have patterns which look even more sphragistic exactly because of close analogies to be found in the seal designs of Crete and western Asia. Finally, Payne has remarked that the sudden cessation of the platform bronzes at the end of the Geometric period, just when ivory seals began to be made in Greece, also strongly suggests that the bronzes were used as seals.

It is constantly becoming clearer that the Greeks of the Geometric period, especially in its later phase, did not live in such complete isolation from the outside world as was once supposed. From evidence collected in the present study (still in progress), the Geometric bronze platform figures exhibit foreign connections which may be expected to throw some further light on the external relations of eighth-century Greece.

TWO OLD WOMEN FROM NEW YORK: *Rhys Carpenter*, Bryn Mawr College.

The two old market-women in the Metropolitan Museum in New York have been very generally classed together as Hellenistic genre sculpture from the second century B.C. This description may apply to one of them, but is demonstrably wide of the mark for the curiously bent woman with the basket of fruit and fowl. Her pose is inappropriate to her action; and she is pressed into a two-dimensional silhouette. Her drapery is constructed almost exclusively of sharp narrow ridges according to the formal principles of fifth century design. Anatomically, she is only superficially senile. This statue is therefore one of those astonishing pastiches, in which a fifth century prototype has been fused with later realistic material to produce an interestingly new but stylistically incoherent creation. Pose, scale, and drapery indicate that the copyist has worked directly from some lost statue-in-the-round representing a Nike restraining a bull or busy before a trophy and related to the Nike parapet masters. The head and basket with contents have of course been added; and these betray by their technical execution the date of the work, which is early Flavian, belonging therefore with such similar composite creations as the Esquiline Venus and (perhaps) the Spinario.

COLOR PHOTOGRAPHY FOR COINS: *Laura B. Voelkel*, University of Virginia. (No summary was submitted.)

NOTE ON POLYBIUS: *Leslie F. Smith*, University of Oklahoma.

Polybius was unique in his nane. Though his work is full of names which recall the mythology and glorious past of Greece, he himself had never heard of another Polybius. Yet the stele found at Cleitor in Arcadia cannot certainly be said to contain a portrait of the historian, since it is just the vital part of the inscription which is missing. The name could be Polycles, for instance.

Then there is the question of what qualifications a historian should have. Polybius makes these so extensive that, though they remain an ideal for all historians, practically only he could and did live up to them. In this respect, too, he may well be termed unique.

NOTE ON THE TYRANNICIDES: *Chryssoula Cardaras*, University of Chicago. (No summary was submitted.)

ARCHAEOLOGICAL NEWS

EUROPE

C. Bradford Welles, *Editor*

PLATES XXI–XXXI

The Editor wishes to thank the various European contributors who have again generously submitted manuscripts. The translations have been made in the United States, that of Professor García y Bellido's report by Daniel E. Woods, the others under the direction of the Editor. Considerations of space have required the shortening of some manuscripts more than would have been desirable. Responsibility for the references devolves upon the contributors, especially since a number of the journals cited are unavailable.

SPAIN AND PORTUGAL

By Antonio García y Bellido*

A. Palaeolithic and Neolithic

AN exceptionally interesting series of rock-paintings was discovered, during the spring of 1947, on the boundary of Alacón, north of the Province of Teruél. This discovery enriches the already large repertory of prehistoric paintings which, contrary to former opinion, are now believed to be dated in the Neolithic period. They were found like their predecessors of similar type in the usual series of rock shelters. They consist of large pictorial compositions, in large part destroyed but some of them sufficiently intact for purposes of exact reproduction and study. We present here four general views (figs. 1–4). In fig. 1 may be seen an ass evidently already in a domestic state, to judge from its peaceful association with the human figure. In the center of fig. 2 may be observed a very curious hunting scene, containing figures of different sizes and by different artists. Some of the figures are stylized, others are more realistic. Note the presence of a human seated figure, similar to another in the fragment, to the left in the same reproduction. In the last mentioned fragment may be seen a horseman breaking a horse, which he mounts and tames by holding on to the mane. To the right in the same illustration human figures may be seen climbing schematized trees. The subject no doubt represents the gathering of fruit. Also note the presence of a sheep, which takes us, it would seem, to Neolithic times when animals appear in a domestic state. In fig. 3 again may be seen representations of fruit gathering (in the center); of the hunt (a goat chase in the left); and of war (on the right). In the war scene appears the surprising silhouette of a man marching with great strides in a highly naturalistic manner as if caught by a photographic camera. Fig. 4 shows a large deer, some goats and other smaller animals, as well as hunters, one of whom, in the center, is heading with long strides to the right.[1]

B. Punic and Greek Colonization

A preliminary notice of the archaeological campaign of 1946 in the famous Punic necropolis of Puig d'es Molins, near Ibiza, has already been published. This is one of the most important Punic sites in the entire Mediterranean. It is the site of the necropolis of Ebysos (or Ebusus), a Carthaginian colony founded according to the texts in 654 B.C. As is well known the site was considerably altered by the Arabs, who were on the islands until the thirteenth century, but in as much as they were only looking for jewels, they left almost all of the archaeological material within the hypogea. The current excavation revealed a great quantity of disturbed and confused material. The richness of the objects found, however, is such that it fills many shelves of the museums of Ibiza, Barcelona, Madrid, and Sit-

* The translation has been made by Daniel E. Woods, Manhattanville College. The abbreviations used are those codified by the *AJA*. For those not included in that codification see the list given in Volume lii, no. 1 of 1948, p. 241.

[1] T. Ortego, *AEArq*, lxx, 1948.

Fig. 1

Fig. 2

FIG. 3

FIG. 4

ges (near Barcelona). In Sitges the objects are kept in the Museo del Cau Ferrat. During the methodical excavations of 1946 various additional subterranean chambers of the well known type were discovered, which contained several sarcophagi. The chambers, as usual, had been rifled and their separating walls had been perforated by the treasure hunters. A complex of underground chambers has yielded an abundance of material pertaining to the Roman epoch (fig. 5). We must wait for the publication of all of the archaeological material before we can give a judgment based on a consideration of all of the elements.[2]

The interesting collection of decorated ostrich eggs from the necropolis, preserved in the Museum of Ibiza, recently has been studied by Mañá.[3]

Beltrán lately has been working on the topographical problems of Punic and Roman Carthago Nova. His results push further the studies of Kromayer, Kahrstedt, De Sanctis, and the more recent ones of Schulten and my own.[4]

Our knowledge of the Greek culture of the Peninsula has been enlarged by the discovery of new ceramic finds, especially those of Hoya de Santa Ana, near Tobarra (Albacete), where in one necropolis, its furniture as yet unpublished, appeared a glass Naukratine aryballos (Pl. XXI, A), green in color and very similar to the one in Ampurias.[5] Up to now it is the most ancient piece of Greek pottery found in the region south and south-east of the Peninsula, where however have appeared various Greek bronzes from the seventh–sixth centuries.[6] We can now give a reproduction of the Greek bronze from Malaga (pl. XXI, B) which we briefly mentioned in the last chronicle. It was found, so it seems, in the Malagan Alcazaba. When it was found we can not say, but it later passed to a private collection. It measures 18.3 cm. and shows a very fine technique, with engravings in relief carefully made on the hair, eyes, ears, etc. A human figure holds two man-headed bulls by their tails, their shaggy heads sprouting small horns. Down below, over the palmette, are two winged harpies, their heads

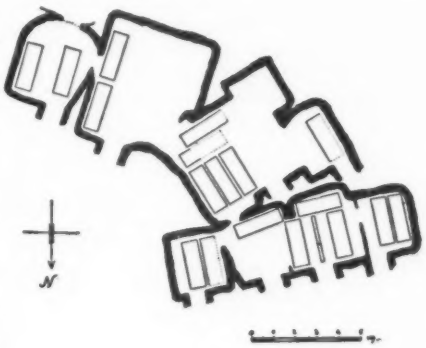

FIG. 5

encircled by a diadem.[7] We are now obliged to mention the appearance of a work devoted to a study of Greek colonization on the Iberian Peninsula in all its aspects, not only historical, but also archaeological. The fact that I am its author prevents me from giving any judgment of the work.[8] It has been reviewed in various European and American journals to which we refer the reader for further information. The collection of polychromatic glass paste vessels in the Museum of Gerona which come from the Greek necropolis of Ampurias, recently has been published by M. Oliva.[9]

C. Celtic Culture

The results of the excavations of Bagunte are still unpublished. However its excavator, Sr. Russell Cortez, has kindly furnished us with a plan of the part uncovered up to 1947 and from all appearances we are able to report that the site is

[2] v. Mañá, *Crónica del III Congreso Arqueológico del S. E. Español, Murcia 1947*, Cartagena, 1948.

[3] *MMAP*, viii, 1947.

[4] A. Beltrán, *AEArq*, lxxii, 1948.

[5] Cf. A. García y Bellido, *Hispania Graeca*, ii, 151; iii, pl. LXVI, 14.

[6] *Ibid.*, especially vol. ii and iii. The necropolis of Hoya de Santa Ana, without its contents, has been given brief notices by the excavator J. Sánchez Jiménez, *Excavaciones y trabajos arqueológicos en la Provincia de Albacete, 1942–1946*, Madrid, 1947.

[7] Giménez Reyna, *Memoria arqueológica de la Provincia de Malaga hasta 1946*, Madrid, 1946.

[8] A. García y Bellido, *Hispania Graeca*, Barcelona, 1948; two vols. of text, one vol. of plates.

[9] *MMAP*, viii, 1947.

one of the most interesting on the Peninsula. In the meanwhile we must wait for the excavator to make it completely known. On the other hand the results of the 1945–47 campaigns conducted in the "castro" of Sanfins, northeast of Oporto, have been published. The plan (fig. 6) of the part excavated up to now, although quite little in comparison with the enormous area of the "castro," already offers all the general characteristics of this cultural nucleus, so well represented in the "castro" of Coana (Asturias), summarily published in our previous chronicle.[10] As in the "castro" of Coana, the house of circular plan predominates. A new sign of progressive urban development is indicated by the appearance of some easily determined streets.[11] We must give a hasty account of other studies recently launched and related to the culture of the "castros" of the peninsular Celtic area. We cite the work of F. Alonso-Cuevillas on certain particulars of the "castros" of the district of Lalin, in Galicia;[12] and the work of A. Tovar, Professor in the University of Salamanca, devoted to the problem of the area of Celtic expansion on the Peninsula.[13] Prof. Tovar examines the problem in three parts from the point of view of the linguist and philologist; 1) by the distribution of the peoples; 2) by the distributions of the centuries; 3) by the remains of the Celtiberian language on the inscriptions written in the Iberian alphabet. The results show that the Celtic element was distributed by distinct surges in the north central and western parts of the Peninsula. These results exactly coincide with those found by the archaeologists working with archaeological material. Prof. A. Tovar has also treated the Celtiberian and other ancient languages of Spain,[14] and intends to attempt a clarification of some of the grammatical forms.

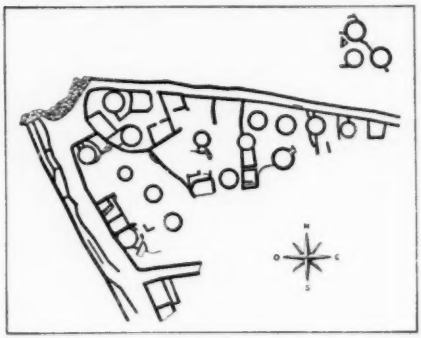

FIG. 6

D. IBERIAN CULTURE

Not much can be reported in this chronicle about the new archaeological discoveries of the Iberian culture, which normally gives the greatest number of finds within the general framework of peninsular archaeological activity. The new things, some of them important, all come from the Province of Albacete, where one excavation and one chance find have contributed two important pieces of sculpture. We refer to a head, almost life size, found in the famed site of Llano de Nuestra Señora de la Consolación, near Yecla, an Iberian piece, in technique not unlike others already known for a long time, and not very different from those found in the equally famous and nearby site of Cerro de los Santos. The other important piece is a winged sphinx with human head, which appeared in Bogarra, Haches, without any explanation concerning the circumstances of its discovery. It (pl. XXI, c) is sculptured in soft sandstone, 70 cm. high, and perhaps was attached to a door jamb as a guardian genius. The piece shows the body of a winged lion, lying on the ground, with human neck and head and a feminine countenance. The head is crowned with a diadem and from the temples hang two large cord-like braids. Its expression somewhat recalls the archaic smile of Greek sculpture; its plain wings are schematized and have straight, even, edges; its feathers are geometrically indicated by a series of incised parallel lines. This Sphinx of Bogarra again revives the difficult problem of that art which we usually refer to as Iberian, but which for the most part is purely an Ibero-Roman provincial art. However there seems to be some proof, such as is revealed in this Sphinx, and in the head of the Griffon of Redo-

[10] *AJA*, lii, no. 1, 1948.

[11] For the "castro" of Sanfins see E. Jalhay and A. do Paço, *Brotéria*, xlvi, 1948.

[12] *Bol. del Museo Arqueol. Prov. de Orense*, iii, 1947.

[13] A. Tovar, "Notas sobre la fijación de las invasiones indoeuropeas en España," *BSEAAUniv. Vallad.*, fasc. xliii–xlv, 1946–1947.

[14] "Über das Keltiberische und die anderen alten Sprachen Spaniens," *Eranos*, xlv, 1947.

ván, and in the Sphinx of Agost, and in others, which makes it impossible to entirely reject a Greek archaic ancestry, whether it came to the Peninsula directly or indirectly through the medium of the Phoenicians or the Etruscans. For me the existence of a Greco-Iberian art is undoubted, or to be more precise there was a Greek provincial art, just as there was a Punic provincial art (Ibiza, Carmona, Cadiz, etc.), and later a Roman provincial art, quite distinct from the court-like art of the metropolitan centers. In fact in the Sphinx of Bogarra I believe I see a local Greek work, perhaps much more recent than the archaic smile would seem to indicate, with strong Punic characteristics, noticeable above all in the type of wing and in the shape of the face and mouth. To this strong Punic influence also must be attributed the lack of modelling in the body and the flatness of the sculpture.[15] With regard to the recent books dealing with Iberian Culture in general we would like to call attention to an important publication by Professor Gómez-Moreno who has brought up to date the Corpus of Iberian Inscriptions by means of a thick supplement to E. Hubner's *Monumenta Linguae Ibericae* (1893). No less than fifty-five years have passed since Hubner's monumental work was published and these years have been fruitful in archaeological and linguistic activities. At the same time they have enriched to a considerable degree our knowledge of the alphabet and our store of inscriptions. Professor Gómez-Moreno's work is valuable not only for the number of inscriptions it has added to the Corpus, to which may now be appended the newest one from Ibiza and those discovered in the Narbonensis, but also for the introduction with its new system of phonetic values for the doubtful signs.[16]

[15] For these two discoveries see the notice by J. Sánchez Jiménez, *Excavaciones y trabajos arqueológicos en la Provincia de Albacete de 1942 a 1946*. For the problems of Iberian art and chronology see *AEArq*, l and lii, 1943. For Greek provincial art in Spain see *Hispania Graeca*, ii, 136 and iii, pl. LXIII; the Lady of Elche, 145 f. (Sphinxes of Agost and head of Redován). See also *Ars Hispaniae*, i, 193 f. (on provincial Greek art) and 258 f. (on chronology).

[16] M. Gómez-Moreno, *La escritura ibérica y su lenguaje. Suplemento de epigrafía ibérica*, Madrid, 1948; the stele of Sinarcas is included (west of the Prov. of Valencia) and was formerly published by P. Beltrán in the *Bol. de la Real Acad. Española*, xxvi, 1947.

E. The Roman Epoch

We shall begin with the finds discovered in the "Tarraconense." We can now reproduce the female head found in 1947 in the ruins of the Roman city of Ampurias (pl. XXII, A) and about which we spoke in the previous chronicle.[17] It is a provincial work of the Augustan era, and recalls the style of the "imagines maiorum," judging from certain traces indicating "rigor mortis" and the technique of wax casting.[18] Concerning the sarcophagus called "Sarcofago Montolfu" after its last owner, an important monument which was believed lost, it is a pleasure to report that it turned up a short time ago on the Madrid market and was acquired by the Museo Arqueológico Nacional where it may now be seen. It must have been discovered in Tarragona in the 16th century; at any event it was cited and described in that century. It is one of the few examples of the Greek type found on the Peninsula and shows a battle between Greeks and Trojans. By a rare coincidence one of its lesser sides, known centuries ago in Tarragona and subsequently lost, recently was rediscovered embedded in the wall of a house.[19] Again in Tarragona this past summer another sarcophagus was lifted out of the sea; it contains reliefs and has not as yet been published.[20] The story of submarine finds, which lends a certain romantic adventurous note to archaeological activity, leads us

[17] *AJA*, lii, 1948, no. 1, p. 258.

[18] v. A. García y Bellido, *RABM*, liii, 1947; and Almagro, *MMAP*, viii, 1948.

[19] The smaller side was studied by Rodenwaldt, who did not know the front side, in *Hom. a. Mélida*, ii, 1934. Now on the occasion of its accession by the Museo Arqueológico de Madrid, we have made a study of the relation of both parts and their strange history, *AEArq*, lxxi, 1948.

[20] (Translator's note:—The translator was in Tarragona this past summer and was invited to accompany the group of archaeologists when the sarcophagus was lifted out of the sea; he vouches for the fact that the sarcophagus is an extremely interesting one. It is comparatively well preserved; measures about 2.04 meters in length, 1.07 meters in width, and 1.10 meters in height without the lid which is missing. There are about half life size figures in relief on the four sides, the figures in front in higher relief than those on the other three sides, which depict scenes of the hunt among other things. The sarcophagus dates about second century of our era.)

at this time to speak of some explorations recently conducted in the waters near the coast of Cartagena (ancient Carthago-Nova, a very active port in the last two pre-Christian centuries). In fact, about 1905 a certain sponge company found some 30 anchors from Roman boats in the bottom of the sea. They are made of lead, are of different sizes and bear inscriptions.[21] They were discovered in the vicinity of the Cabo de

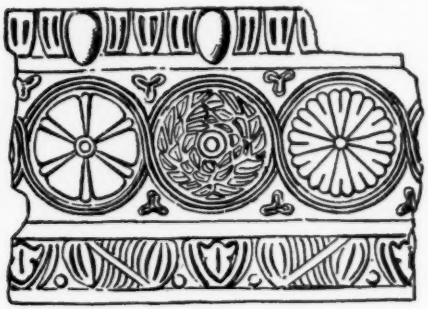

FIG. 7

Palos, near Cartagena, but the exact position of the site where they were found was not revealed, no doubt because it involved business secrets. It seems that the information divulged by the divers revealed the presence of many more similar pieces lying in view at the bottom of the sea. Some said that there might be 400 more pieces. To "fish" for this important and unusual archaeological treasure explorations were made in 1947 along the coast for the purpose of seeing whether the deposit of anchors could be found. The trained divers from the School of Divers of the Naval Base of Cartagena were used during the explorations. The results obtained were very different from those expected. The deposit of anchors was not found but instead other things were found in the coastal zone of San Pedro del Pinatar as well as that of the island of Escombrera (the Skambraria of Strabo, iii, 4, 6) which closes the entrance of the natural port of Cartagena. These submarine fields are extensive, one of them measuring about 800 meters in length, and they are filled with unbroken and broken amphorae. In the first campaign a number of examples was rescued, now in the Archaeological Museum of Cartagena, and has been published by Sr. Jauregui, Commander of the Cruiser Canarias and director of the explorations.[22] It would seem that we are confronted with a submarine "Monte Testaccio," the complete exploration of which will doubtless yield results of great scientific interest. The anchor-stocks and the ingots of lead with their inscriptions have recently been studied by A. Beltrán.[23] In Cartagena itself during the erection of a house a marble statue (pl. XXII, B) was discovered, somewhat smaller than life size and evidently influenced by fifth century prototypes. The statue may represent a Hermes Dionysophoros and is now in the local museum.[24] In Villajoyosa, near Alicante, an extremely interesting discovery has revealed the mutilated remains of a rich building, apparently a "villa." The hypocaust of the "thermae" of the mansion has appeared, as well as

FIG. 8

other rooms of the dwelling. Mosaics have been uncovered, and money of the fourth–third centuries which helps to date the remains. More interesting, however, is the appearance of gesso

[21] F. Fita, *BRAH*, xlviii, 1906.

[22] *AEArq*, lxx, 1948.

[23] *MMAP*, viii, 1947.

[24] A. Beltrán, *AEArq*, lxxi, 1948.

fragments worked with extremely varied geometric and floral designs, which decorated the walls and even the ceilings of some of the rooms of the "villa." We offer only a few of the ornamental motives (figs. 7–9) from the great variety of themes which appear, some of them as we have already indicated forming a part of the ceiling decorations. It is to be regretted that for the most part the evidence has been found in a confusing mixture and without stratification. Nevertheless a small part of a dado appears "in situ." Up to now no systematic and earnest study of these ornamental motives has been made, and no exhaustive study has been made of this decorative work in fresh gesso; however, it is perhaps possible to anticipate that these patterns seem to

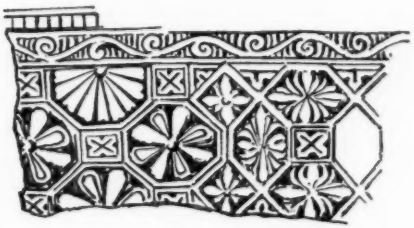

FIG. 9

indicate a dependence upon oriental themes and methods, possibly Syrian or Mesopotamian. The date also would seem later than the coins indicate, and the decoration may be a prelude to the gesso decorations of the incipient Arabian art.[25] In the interior of the Province, in Ontur and near Hellín (South of the Province of Albacete) a Roman necropolis has been found, one grave evidently that of a little girl containing various small dolls made of bone and one doll of amber (fig. 10). In another grave of inhumation the excavators found the remains of a shoe with soles of skin and innersoles of cork (fig. 11) and the sculptured lid of a sarcophagus (pl. XXII, c) depicting, it would seem, the hunt of Atalanta and Meleager.[26] In Liédena, Province of Navarre, an important late Roman "villa" has been excavated. We hope to be able to discuss this more completely when it is better known. With respect to the rest of the excavations some notices

FIG. 10

have appeared in the form of an archaeological miscellany containing an intermingling of things old and new and advantageously presenting the work as a geographical unity and with a list of the sites in alphabetical order.[27] From the monuments discussed in this publication we wish to

[25] Two reports rich in illustrations have been published by the Director Sr. Belda in *MMAP*, vii, 1946; viii, 1947. It seems that another report will also be published later in the *MMAP*.

[26] Sánchez Jiménez, *Excavaciones y trabajos arqueológicos en la Provincia de Albacete de 1942 a 1946*, Madrid, 1947.

[27] Taracena y Vázquez de Parga, *Príncipa de Viana*, vii, 1946.

give particular notice to a piece of sculpture (pl. XXIII, A) which is as interesting as it is unknown. There are several more pieces in the region like it, and the type seems to be plentiful throughout the north central part of the Peninsula. The study of these monuments, a task which I have recommended to one of our students, should furnish us with material that will give us a better knowledge of barbaric provincial funerary art. The monuments contain inscriptions and very expressive reliefs, at times with symbols identical to those encountered in other parts of the Roman Empire.[28] On the stele which we publish may be seen the defunct dressed in a tunic, seated frontally, and with feet on a footstool. Around him is a large circle, evidently a funerary crown; immediately beneath this is the inscription, in which the name Viriathus appears, identical to the one borne by the leader of the second century B.C. wars against the Romans; and lower still, to the right, a bull appears, and in the lowest part a large rosette, two small rosettes, and two libation jars. In the corners of the upper square compartment where the image of the dead is placed there are two rosettes, two combs, and two sacrificial paterae. That the monument is a pagan one is indicated by the presence of *D.M.* in the inscription. The vine shoots and leaves of the grape vine which appear in the border of the stele contain funereal symbolism, as well as the branches of ivy on both sides of the bull. The monument is still embedded in the church of the Novarran village of Gastiain. The Archaeological Museum of Madrid recently has been enriched by the acquisition of two important pieces, hitherto practically unnoticed by scholars because they were privately owned. Both mosaics can now be admired with every convenience. One of them is the mosaic found in Zaragoza (ancient Caesar Augusta), a large square representing the Triumph of Bacchus (pl. XVIII, B); the other[29] comes from Liria, near Valencia, and shows the twelve labors of Hercules around a large central square containing the figures of Hercules and Omphale (pl. XXIV). Another important acquisition of the same museum is the group of objects from a necropolis excavated at the end of the 19th century in Palencia (ancient Pallantia). We select two objects for discussion from this multitudinous and varied group: a head (pl. XXIV, A) which although very mutilated is the latest dateable Roman portrait (first half of the fourth century) as yet found on the Peninsula; and a piece of bone in the shape of a truncated cone (pl. XXV, B) with continuous reliefs.[30]

FIG. 11

[28] Cf. F. Cumont, *Symbolisme funéraire des romains.*

[29] For the mosaic of Liria, see Lippold, *JAI*, XXXVII, 1922; A. Fernández de Avilés, *Adquisiciones del Mus. Arq. Nac. 1940–45*, Madrid, 1947.

[30] For necropolis of Palencia see *AEArq*, LXXI, 1948;

Let us now pass on to Baetica, a region which covered approximately what is Andalucia today, and which in Roman times was the most Latinized part of Spain. Consequently examples of the most pure kind of Roman art constantly are appearing here. The lately reinstalled archaeological museum of Seville contains pieces which can vie with the best finds of this region or any other Roman province. A tour of inspection through the district of Malaga revealed a series of monuments a portion of which we have published in a short article.[31] We isolate the most important, all of which are in the region of Antequera (ancient Anticaria) a rich town near Málaga. The so-called "Carnicería de los Moros" is today a great wall decorated by fifteen blind arches, the only visible remnants of what would seem to have been a luxurious Roman residence of the third or fourth century and the remainder of which lies buried and still awaits excavation. We have seen and studied two privately owned Roman busts[32] of Antonine times, in the town of Antequera, and also a bronze statuette, 6.7 cm. in height, representing the Tyche of Antioch on the Orontes. The statuette is a faithful reproduction of the type well known from various copies (Vatican; Budapest; Col. Clerq, Paris; Florence; Metropolitan Museum, New York; British Museum; Turin).[33] Our piece shows peculiar clamps in the rear, no doubt for insertion into some cult standard. It may be fitting to recall that there was a community of Syrians and Asiatics in Málaga, known from a Greek inscription of the 1st century A.D.[34] A group of ancient pieces in the City Hall of Antequera and recently published by us contains a head of Hadrian (pl. XXV, c), a provincial work showing in the beard a "punctillism" technique similar to that found in portraits of the IIIrd century. We also mention from the series the four sides of an altar, evidently second century of our era, showing attendants leading a bull to sacrifice; "ministri" bearing offerings; a scene of sacrifice before an altar; and an enthroned Jupiter flanked by a Victory flying over a globe (behind) and a female figure (in front). The Victory is placing a crown on the head of Jupiter. The archaizing character of the female figure in front of Jupiter, as well as the beards of some of the persons in the sacrificial scene, indicate a second century date for these reliefs. The technique is provincial. Fortunately a few days before our visit to Antequera a Roman bust (pl. XXV, D) was discovered by chance. We published it as a portrait of Drusus Maior and done perhaps in the time of Caligula. Poulson writes us that he believes it is more likely a Germanicus and relates it with a piece in Corinth[35] which he likewise believes might be Germanicus (an opinion which Curtius had). However aside from similarities in hair and incipient beard we do not see facial parallelisms that would make us modify our opinion. In any case the head is a Julio-Claudian portrait which doubtless will contribute to an understanding of the difficult iconographic problem, presented by this family. We take this opportunity to mention the sculptured group, probably funerary or commemorative of a Roman marriage, found in the "Cortijo de Tixe" (Torre de los Herberos, Dos Hermanas, near Seville).[36] It is a group of provincial character similar to others already known.[37] The group measures 1.14 meters in height and is made out of porous limestone covered with a coating of white stucco showing traces of red color. It seems to be an early imperial piece and is of great interest since it is technically related to the statues from Cerro de los Santos which are chronologically partly republican and partly imperial as I have already shown.[38] Finally in Corroba another lead sarcophagus[39] has appeared similar to those cited and reproduced in our previous chronicle.[40]

Concerning the chance finds from the Province of Lusitania first we shall mention those from the

for the objects in the museum see Taracena, *Adquisiciones del Mus. Arq. Nac. 1940–1945;* for the head see A. Fernández de Avilés, *AEArq*, lxvii, 1947.

[31] S. Giménez-Reyna y A. García y Bellido, *AEArq*, lxx, 1948.

[32] Reproduced in our article cited above.

[33] All copies cited may be seen reproduced in Toynbee, *The Hadrianic School*, pls. XXVIII–XXX, except the copy in Turin which is reproduced in *Atti Soc. Torino*, iii, 1881, pl. XV.

[34] *CIL*, ii, p. 251; *CIG*, xiv, 2540.

[35] Franklin P. Johnson, *Corinth*, vol. ix, p. 77.

[36] Cf. *AJA*, lii, no. 1, p. 262.

[37] *The Archaeological Journal*, vol. ciii, 1946, pl. IV, fig. *a; Germania Romana*, iv, pl. XXIV, *5*.

[38] *AEArq*, lii, 1943.

[39] Samuel de los Santos Gener, *MMAP*, viii, 1947.

[40] *AJA*, lii, no. 1, 1948, p. 262, pl. XXVII, c.

Spanish, next those from the Portuguese part of the Peninsula. Ever generous Merida has yielded two portraits: one (pl. XXVI, A) an excellent piece, unfortunately with its face half destroyed, which perhaps must be placed—in spite of its deceptively earlier appearance—in Flavian or Trajanic times; the other (pl. XXVI, B) is more obviously Flavian or Trajanic and represents a man with a light mustache and closely trimmed beard, showing certain negroid characteristics.[41] In addition to these two heads we must mention three more, found several years ago but placed at our insistence in the Museum of Merida in 1948. Two of these heads have been published,[42] but the third has not been published. It is a portrait of a Julio-Claudian "p:inceps" (pl. XXVI, C), perhaps the young Tiberius of 25–30 years old, one of the series last studied by Curtius,[43] and especially comparable to the portrait bust in the Lateran.[44] It however shows a fuller countenance although the same structure in the lower features. The hair does not differ very much in fashion, but it is not the same in technique. Compare it also with the Ny Carlsberg bust #623.[45] The fact that it was found near a bust of Augustus may indicate that we are aiming in the right direction. It may possibly represent Drusus Maior, and the bust mantioned above in the Lateran Museum has also been considered a Drusus. Another late discovery is a funerary stele found on the outskirts of Merida where others of a similar type have been found. From the date of this one as well as of the other stelae we can suspect the existence of a cemetery here throughout the third century. It is dedicated to L. Antestius Persicus and judging from the style of the toga must date in mid-third century. The stele is one of a type forming an Emeritan group already quite numerous.[46] Without leaving Merida we wish to call attention to a curious find recently put in the local museum with the others just mentioned. It is a well head suspected by some of being medieval, but clearly pre-Christian as the individual figures on each of its eight sides proclaim. A goat footed faun and a dancing figure with cymbals can be distinguished. The other figures, (among them two dolphins, a very popular motif in Roman art) are hard to identify. In each of the eight corners are unfluted columns with crude Corinthian capitals. The well head originally may have been a column base or something of that sort. It measures 0.55 m. in height and 0.90 m. in diameter, and was found in Pancaliente on the outskirts of Merida.[47]

From the Portuguese part of ancient Lusitania have come notices and pictures of a magnificent mosaic of great size, with many scenes and an inscription. It was found two years ago in Torne de Palma and Professor M. Heleno, University of Lisbon, is preparing a study for publication. For Merobrija, near Santiago de Cazem (Alemtejo, on the Atlantic coast) because of insufficient data nothing can be added to what has been said in our former chronicle. A preliminary survey for the methodical excavation of ancient Ammaia (near San Salvador de Aramenha, in the district of Marvâo close to the Spanish frontier) has been made. Only the inscriptions (some unknown) pertaining to the site have been published.[48] It is interesting that two of the inscriptions reveal the names of two local divinities: Ocrimira, hitherto unknown; and Toga, formerly known only from an inscription on a stone from Torre de la Mata (Cáceres) near the present site.[49] We have no new data about Conimbriga. However, a fine photographic album with excellent plans and a brief introduction has been published, from which we reproduce, as a complement to what we have said in our previous chronicle, two of the clearest plans, (figs. 12–13).[50] A sarcophagus (pl. XXVII, A), now in Belem, perhaps one of the most important found on the Peninsula, was recently discovered by A. Mesquita de Figueiredo in Vila Franca de Xira, near Lisbon, The front and two smaller sides are decorated with a thick vineyard, in relief, showing among the leaves and fruit winged youths as little loves, birds pecking grapes, little rabbits, small lizards, grasshoppers, etc. The bust of the defunct, apparently a little girl, within a large concave disc, appears in the centre over the

[41] Sáenz de Buruaga, *MMAP*, viii, 1947.

[42] A. Floriano, *AEArq*, lv, 1944, figs. 17–18.

[43] *RM*, l, 1935, pp. 309 f.

[44] No. 354, Curtius, pls. 57–58.

[45] West, *Röm. Porträtplastik*, i, 130, fig. 135.

[46] Briefly mentioned by Sáenz de Buruaga in *MMAP*, vii, 1946.

[47] Sáenz de Buruaga, *MMAP*, vii, 1946.

[48] E. Jalhay, *Brotéria*, xlv, 1947.

[49] *CIL*, ii, 801.

[50] *Ruinas de Conimbriga. Boletim da Direcção Geral dos Monumentos Nacionais*, no. 52–53, Lisboa, 1948.

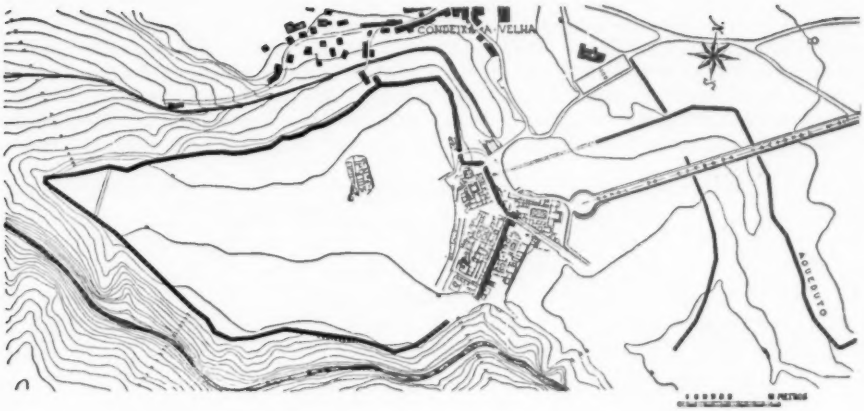

FIG. 12

FIG. 13

handles of a large basket covered with leaves of the vine. An Ionic cymation with egg and pearl ornamentation runs round the top. The form of the sarcophagus is the so-called "bathtub," or Greek ληνός, "trough" or grape press, and evidently containing funereal symbolism. It is related to the famous sarcophagus of San Lorenzo.[51] The coiffure of the figure dates the piece about mid third century. The oriental origin of the sarcophagus of San Lorenzo may indicate the same for that of Vila Franca de Xira.[52]

We must complete our account by referring to various studies which affect Roman archaeology on the Peninsula. There is a long article by Dr. Schlunk on the sarcophagus of Castiliscar, known for a long time but not very well published. Dr.

FIG. 14

[51] Taylor, *Art Bull.*, 1927; Rodenwaldt, *JAI*, xlv, 1930.

[52] A. García y Bellido, *AEArq*, lxxi, 1948, where are grouped the other sarcophagi of oriental origin found in the Iberian Peninsula. Our thanks are due to Srs. Heleno and Mesquita de Figueiredo for the information and the photographs.

Schlunk has attempted a complete revision of early Christian sarcophagi. The study is of great general value since it affects the problems of early Christian relief.[53] The mosaics of Northern Portugal have been briefly treated by E. Russell Cortez.[54] My pupil L. Monteagudo is busy with a study of Galicia in Ptolemy.[55] Professor Schulten has published a new edition of his pamphlet on ancient Tarragona.[56] The "Sindicato de Iniciativa" of Tarragona has published a series of documents relating to the preservation of the lower Forum, which is threatened with destruction.[57] Lastly we cite two of our works, one a study of the Mythraic cult in the Iberian Peninsula,[58] the other a catalogue of Roman portraits in the Archaeological Museum of Barcelona, including a number of forgeries, purported to be Roman, some of which are in Spanish and Portuguese museums.[59] J. de C. Serra Rafols recently has studied the collection of Bacchic herms in the Museum of Barcelona.[60]

FIG. 15

F. VISIGOTHIC ERA

Work on the important excavations of Cerro de la Oliva, the supposed Visigothic city of Re-

[53] H. Schlunk, *El sarcófago de Castiliscar y los sarcófagos paleocristianos españoles de la primera mitad del siglo IV, Príncipa de Viana*, viii, 1947.

[54] *Mosaicos Romanos no Douro, Anais do Instituto do vinho do Porto*, Porto, 1946.

[55] L. Monteagudo, *Galicia en Ptolemeo, Cuadernos de Estudios Gallegos*, viii, 1947.

[56] A. Schulten, *Tarraco*, Barcelona, 1948.

[57] M. de Montoliu, *El Foro Romano de Tarragona, coleccion de documentos y articulos*, Tarragona, 1948.

[58] *BRAH*, cxxii, 1948.

[59] *RABM*, liii, 1947.

[60] *MMAP*, viii, 1947.

copolis, where many interesting finds have been made,[61] has been postponed due to the death of the director, the illustrious archaeologist Dr. Juan Cabre y Aquilo. In Portugal, on the shores of the Duero, excavations have uncovered an important Roman-Visigothic city, according to reports from the excavator. The city was on a fortified hill; a walled precinct with remains of buildings within has come to light. Details are as yet unknown; only a plan of the site has been communicated to the *AEArq*[62] by Sr. Russell Cortez. The site (fig. 14) is in Fonte do Milh, near Canela do Douro, next to Régua, to the west of Oporto. The important collection of Visigothic belt clasps now in the Barcelona Archaeological Museum, recently has been studied by Professor Almagro.[63]

FRANCE

By Paul-Marie Duval, Directeur des Études Gallo-Romaines à l'École Pratique des Hautes Études (Sorbonne)

A center of documentation and of prehistoric research has been created at the Musée de l'Homme (Palais de Chaillot, Paris) under the direction of A. Leroi-Gourhan, H. Kelley, and Franck Bourdier, with a department of identification of soils and artifacts and a school of prehistoric excavations. At the Centre National de la Recherche Scientifique is the Comité technique de la Recherche archéologique en France, under the direction of A. Merlin and A. Grenier. This Comité is the publisher of *Gallia*, of which two numbers appeared in 1948. These contain in a new section ("Informations") detailed accounts of research accomplished in France in 1947.

Raymond Lantier has resumed publication of the *Recueil général* of Espérandieu; he has issued volume xii,[1] containing sculpture discovered since 1938 in the south-east provinces, particularly at Entremont (in 1943), Glanum, Mouriès, Orgon, Orange, Arles, Vaison, and Vienne. The total number of listed Gallic sculptures is thus brought to 8,030.

[61] *AJA*, lii, no. 1, 1948, p. 266.

[62] No. lxxii, 1948.

[63] *MMAP* viii. 1947.

[1] Emile Espérandieu, *Recueil général des Bas-reliefs, statues et bustes de la Gaule romaine*, xii, *Suppléments* (suite), by Raymond Lantier (Paris, 1947).

In an excellent popular book,[2] Lantier and Jean Hubert retrace the evolution of art in France from prehistoric times down to the eleventh century. Lantier defines the characteristics of Celtic art as purely ornamental and abstract even when it utilizes natural forms. He attempts to trace, for the first time, the evolution of Gallo-Roman sculpture, still primitive in the first century of our era, more supple and picturesque in the second, again under Celtic influence in the third and fourth centuries. Hubert analyzes the first Christian art and the barbarian influences which begin to appear at the end of the third century. He observes the decline of sculpture in the sixth century, except in Aquitania, whence it would reappear in the seventh.

The agricultural technique of the Midi has been the subject of a popular study by Fernand Benoit.[3] The ploughshare, the sickle, the hay-scythe, the grindstone, and the olive press are all earlier than the Roman conquest. The rotary mill and the hydraulic mill appear in the fourth century. The plough appears in the Merovingian period and the scythe for wheat dates from the Middle Ages.

A. Protohistoric Period; Greek Colonization and Independent Gaul

In Marseilles, of which the 1945 excavations are published by Henri Rolland,[4] Fernand Benoit has explored the major part of the lower city of Greek and Roman period.[5] The northern bank of the Lacydon has been found 120 m. to the north of the present wharf; so also the Greek beach of the seventh and sixth centuries B.C. and the moat of the Greek rampart. The Greek *navalia* seem to have been filled in after the Roman conquest. They yielded to a large building, probably a bath.

[2] Raymond Lantier and Jean Hubert, *Les origines de l'art français, des temps préhistoriques à l'époque carolingienne, Nouvelle encyclopédie illustrée de l'art français* (Paris, 1947).

[3] Fernand Benoit, *Histoire de l'outillage rural et artisanal* (Paris, 1947; Collection: "Connais ton Pays").

[4] Henri Rolland, "Fouilles à Marseille dans le quartier du Vieux-Port, Premiers sondages," *Gallia*, v, 1 (1947), pp. 155–160.

[5] Fernand Benoit, "Une conséquence inattendue de la démolition du quartier du Vieux-Port: découverte de Marseille antique," *France-Illustration* (Jan. 24, 1948), pp. 87–90. Cf. *AJA*, liii, 3.

Next to the Roman docks was the Roman port. There were no wharves, but jetties of which the wooden piles have been found. In the way of sculptures there have been found a stele of Artemis in a *naiskos*, fragments of a statue of a nymph with shell, and a marble bas-relief of Zeus. The publication of the pottery, now in preparation, will allow the recovery of the history of ancient Marseilles.

Near Hyères (Var), the colony of OLBIA was explored by Jacques Coupry.[6] The Roman Pomponiana was already known on the same site. Coupry has traced the Greek circuit of Olbia. It is a small, almost square enclosure, the western wall of which has been uncovered. This is built like the wall of Saint-Blaise (Bouches-du-Rhône) of earth fill between two rows of dressed stones, with offset foundation blocks, and dowel holes. This construction must go back to the fourth century B.C. Rectangular towers and a main gate have also been explored.

At GLANUM (Saint-Rémy-de-Provence) Rolland has explored the city towards the south, where a large portico has been discovered. At SAINT-BLAISE (Bouches-du-Rhône) where excavation of the Greek rampart is practically completed, he is exploring the city's interior.

Excavations of ENTREMONT are reported by Fernand Benoit.[7] The houses consist of simple stone squares grouped in *insulae*, probably with a common roof, separated by streets. Some of the corners are rounded, a characteristic found in the city wall. Sculptures have been found in 1946 in the upper city, near a paved road probably leading to a sanctuary destroyed by the Romans in 123. They include a crouching warrior and torsos of warriors, remains of an equestrian figure, heads of helmeted men, women, and ephebes (which may be portraits), and six 'severed' heads, some of them with the eyes closed and a hand resting on the hair. The style of these pre-Roman sculptures reveals varied workmanship, but on the whole indicates non-Hellenic influences: Etruscan, Iberian, or Celtic. The interpretation of the 'severed' heads is also obscure. The group is funereal, but are these the heads of conquered enemies or do they represent the power of death with which the dead would communicate by the imposition of a hand? The author is inclined to adopt the latter interpretation.

At GERGOVIA, the excavations of 1943–1944 of Jean-Jacques Hatt revealed three successive city walls, a Celtic and a first and second Gallo-Roman.[8] To each corresponds an excavation level and a type of dwelling. It is now known that the center of the plateau was occupied about the La Tène period and that during the Claudian period the town was replaced by workshops and dispersed farms. The excavations are now conducted by Michel Labrousse.

ALESIA has yielded pottery with vintage scenes.[9]

Excavations of necropoleis have yielded interesting results. Maurice Louis reports on the excavations of a Hallstatt necropolis at HÉRAULT, from 1937–1945.[10] It is composed of large tumuli (8 to 15 m. in diameter), where coexisted the cremation of late Bronze Age and the inhumation of the early Iron Age. It appears that the first waves of Celts remained in the Languedoc on the waste-lands bordering the coast, without being able to emerge into the plain, at that time occupied by the natives and the Greek trading settlements. In the Aude a crematory necropolis, excavated by 1946 by Mlle. and M. Taffanel, has yielded an even richer Hallstatt collection.[11] The cremation-urn, besides bones, contains a little vase which is accompanied by two accessory vases, one fitting within the other.

[6] Jacques Coupry and Félix Descroix, "Le site antique d'Olbia près d'Hyères (Var)," *RA*, 1947, pp. 12–22.

[7] Fernand Benoit, "Recherches archéologiques dans la région d'Aix-en-Provence (Bouches-du-Rhône), i, les fouilles d'Entremont en 1946," *Gallia*, v, 1 (1947), pp. 81–97; *idem*, "Les fouilles d'Entremont, Recherches nouvelles," *CRAI*, 1947, pp. 395–408.

[8] Jean-Jacques Hatt, "Les fouilles de Gergovie, Campagnes de 1943 et de 1944," *Gallia*, v, 2 (1947), pp. 271–300.

[9] Jules Toutain, "Note sur 99 objets découverts à Alesia en 1946," *Bulletin Soc. Sciences hist. et nat. Semur* (August, 1947), pp. 5–7; "Une scène de vendange sur une poterie d'Alesia," *BCTH*, February 10, 1947, pp. v–xi, pl. II.

[10] Maurice Louis, "La nécropole halstattienne de Cazevieille (Hérault)," *Cahiers d'histoire et d'archéologie*, n.s., ii and v, (Montpellier, 1947).

[11] Odette and Jean Taffanel, "La nécropole halstattienne de 'Las Fados,' commune de Pépieux (Aude)," *ibid.*, v, pp. 3–11.

In another region, Alsace, a large Hallstatt tumulus was excavated in 1946 (diameter 30 m.).[12] The cinerary burial bears traces of fire. Another tumulus (diameter 20 m.) contained two cremation burials of the late Hallstatt period. The dead wore leg-rings and the hands seem to have been crossed on the chest.

Finally, an outstanding collection of rock drawings has been analyzed by M. l'Abbé Glory.[13] These graffiti of the caves of Ariege represent, very schematically, naked warriors adoring a goddess, animals, women dressed in robes with folds, and geometric patterns. There are also cursive inscriptions reminiscent of the Celt-Iberian of paleo-Christian times. The whole group may date between late Bronze and the Gallo-Roman periods.

B. Gallo-Roman Period

Northern, Eastern and Central France.

M. l'Abbé Henri Biévelet has published the results of excavations which he conducted at Bavai (Nord) since 1942.[14] The large building at Bagacum, capital of the Nervii, has proved to be a crypto-porticus, so far uncovered to a length of 140 m. It may tie in with another portico which was also uncovered, thus forming a unit of about 240 m. long. At the end was an edifice with three naves, probably a basilica. The crypto-porticus itself is double and is protected on the outside by a wall in which was built a narrow vaulted corridor. The whole structure was underground, as is proven by a descending stairway and several elements of a ground floor. It is still unknown whether this was a granary or a forum, and the discovery of its purpose should make an important contribution to the study of this particular type of structure, very few examples of which are known in the Roman world (Arles, Narbonne, Grottaferrata). Built of small stones and bricks, it must have been buried during the Severan period. The city wall, built during the Late Empire, takes the elongated form of the crypto-porticus. Some ten semi-circular towers are known, and the city enceinte consists of two walls joined but dating from the same period, a feature of which several examples are known elsewhere, as at Cherchel.

In Paris the exploration of the "Palais des Thermes" (Musée de Cluny) brought to light in 1947–1948 two large drains that mark the limits in the north and the east of a facade uncovered in 1948.[15] The foundations have been reached at two points. They are bonded with the edifice, which was constructed out of new materials, and not preceded by any other structure on the site. The importance of the drains confirms the theory of baths, and the study of the foundations allows the attribution of the monument to the era of prosperity of Lutetia, probably in the third century. The traces remain visible in the Jardin du Musée, and future excavations will explore the south-western part of the monument. The sculptured consoles of the large hall have been fully published. They are prows of eight armed merchantmen, connected with the corporation of the Nautae Parisianorum.

At Senlis, Georges Matherat has improved our knowledge of the wall of the camp. The foundations, as frequently during this period, are constructed of dressed stones taken from demolished buildings. The semi-circular towers are solid masonry up to the chemin de ronde and consist of two stories of 3 m. each. The wall, constructed of small stones with courses of brick, is 3.36 m. in thickness. At the amphitheater, a room facing the street and ornamented with seven niches was probably a temple of Hercules.[16]

At Evreux, parts of the walls were uncovered by bombing in 1940 and 1944. The wall, 3.1 m. thick, has foundations made of flint nodules and re-used cut stones. It is built of small stones with courses of brick.[17]

[12] Jean-Jacques Hatt and H. Ulrich, "Fouille des tumuli 29 et 31 de la Forêt de Brumath," *Cahiers d'archéologie et d'histoire d'Alsace, 1947*, pp. 40–46.

[13] Abbé André Glory, "Gravures rupestres schématiques dans l'Ariège," *Gallia*, v, 1 (1947), pp. 1–45.

[14] Abbé Henri Biévelet, "L'Exploration archéologique de Bavai de 1942 à 1947," *Gallia*, v, 2 (1947), pp. 301–318.

[15] Paul-Marie Duval, "Les fouilles du 'Palais des Thermes' de Paris en 1947," *CRAI*, 1948, pp. 58–62; "Proues de navires de Paris," *Gallia*, v, 1 (1947), pp. 123–142.

[16] Georges Matherat, *Gallia*, v, 2 (1947), pp. 439–440; "Le temple d'Hercule des Arènes de Senlis," *Comptes-rendus de la Soc. d'hist. et d'arch. de Senlis*, 1946–1947, pp. 9–12.

[17] Marcel Baudot, *Gallia*, v, 2 (1947), pp. 450–451.

At ARRAS, in 1944, a complex was discovered of which one building is already excavated.[18] Twelve rooms are known. The foundations are often of sandstone, the walls of small stones, with the upper parts of mud brick or blocks of white stone. Here two successive occupations could be determined, the first of which goes back to the first century of our era.

The important discoveries made at MONT DONON, in the Vosges, from 1934 to 1938, are the subject of two publications. G. Czarnowski studies three Gallo-Roman temples, the substructures of which have been uncovered and one of them excavated almost in its entirety.[19] Two of them were of stone and built on a moulded socle, and one of these was covered with thin stone slabs instead of tiles. The third temple was of wood. The sculptures decorating this sanctuary are analyzed by E. Linckenheld.[20] Seventeen bas-reliefs and new statues of Latinized Celtic gods are among them, the god with the stag, the god with a dog, the god with a sword, and a mother goddess.

In the Corrèze, at the "Château des Cars," excavations in 1936–1938 had uncovered an ensemble composed of an apsidal temple and a mausoleum, both surrounded by a rectangular peribolus. The report, made with the collaboration of an archaeologist and an architect, reveals that the structures, built of local granite, are of cut stones with moulded cornices.[21] The mausoleum contained a cylindrical basin covered by a pyramidal lid. This was the actual grave, which unfortunately had been violated. Not far away was found a bath of the second century of our era. Was this a funerary temple with a "hero's tomb"?

At Clermont-Ferrand, there has been turned up the only known Gallo-Roman wall of AUGUSTONEMETUM, 22 m. long; it is built of stones with courses of brick and decorated with four engaged pilasters. This may be the temple "Vasso Galate" mentioned by Gregory de Tours.[22]

At Saintes (Charente-Maritime), operations during the War revealed that MEDIOLANUM SANTONUM was much more extensive than was suspected. The sculptures found here are being studied by Marcel Clouet.[23]

At PÉRIGUEUX, in 1946–1948, Dandurand has unearthed a portico, an apsidal monument, and walls and curb stones south of the forum.[24]

At LYONS, an inscription discovered in 1946 in the crypt of the basilica of Saint Irenaeus, outside the Roman wall, drew attention to the remains of a pagan basilica erected in the fifth century on the same site. It is probably a funerary basilica.[25] Pierre Wuilleumier is proceeding with the excavation of the Odeon next to the theater. Much smaller than the latter and occupying an oblique position in relation to it, it seems to antedate it.[26]

South of France.

At AIX-EN-PROVENCE, Fernand Benoit has excavated, in 1939–1945, a wealthy Gallo-Roman dwelling dating from the first century of our era. One of the two courts is surrounded by a trilateral Rhodian peristyle with double columns, a structure belonging to the type of Hellenic house which was rapidly replaced by the purely Roman type, with atrium.[27]

At SAINT-BERTRAND-DE-COMMINGES, Bertrand Sapène is conducting the excavation of a large edifice with a basilical plan; three entrances marked by apses have been discovered. The structure, probably earlier than the Flavian period, was remodelled during the Late Empire,

[18] Jacques Heurgon, *ibid.*, pp. 434–438.

[19] G. Czarnowsky, "Le Donon, les fouilles de 1934–1938," *Cahiers d'archéologie et d'histoire d'Alsace*, 1947, pp. 53–66.

[20] E. Linckenheld, "Le sanctuaire du Donon, son importance pour l'étude des cultes et des sites celtiques d'après les récentes découvertes," *ibid.*, pp. 67–110.

[21] Lucien Prieur and Franck Delage, "Fouilles effectuées au 'Château des Cars,' commune de Saint-Merd-les-Oussines (Corrèze)," *Gallia*, v, 1 (1947), pp. 47–79.

[22] Pierre-François Fournier, "Les fouilles de l'Ecole Nestor-Pernet à Clermont-Ferrand," *CRAI*, 1947, pp. 496–501.

[23] *Gallia*, v, 1 (1947), pp. 459–460.

[24] *Ibid.*, pp. 465–468.

[25] William Seston and Charles Perrat, "Une basilique funéraire païenne à Lyon d'après une inscription inédite," *REA*, xlix (1947), pp. 138–159.

[26] Pierre Wuilleumier, *Les fouilles de Fourvière* (Lyons).

[27] Fernand Benoit, "La maison à double péristyle du Jardin de Grassi à Aix-en-Provence," *Gallia*, v, 1 (1947), pp. 98–122.

and its purpose still remains uncertain.[28] Gilbert-Ch. Picard has reported on the trophies discovered since 1926 near the forum temple.[29] They were on three bases behind the temple, facing the forum, and date from the Augustan period; they were destroyed before A.D. 100, probably during the civil war of 68. Each trophy is backed against a tree. In the center was a naval trophy consisting of the prow of a galley ornamented by a siren, surmounted by a globe bearing an eagle. On either side were military trophies, with a standing woman and a kneeling captive, probably representing vanquished Gaul and Spain, as a souvenir of victories gained by Augustus in 25 B.C. over Aquitania and Spain. The combination of land and sea trophies goes back to Hellenistic art.

In VIENNE, where the "Musée lapidaire" has just been opened to the public, Charles Picard has studied a statue of Nemesis-Tyche discovered in 1894 in the baths known as the "Palais du Miroir."[30] This statue, now disappeared, was a good Roman copy of a prototype of the fourth century B.C.

At CHOREY (Côte d'Or) Emile Thévenot has found three colossal heads of the Gallo-Roman period in which Celtic influence is evident.[31] Two are of women with protruding eyes, the pupils in relief; the lips are slightly parted revealing the teeth. The third is the head of a bearded man, in the same severe and realistic style, and like them, 0.66 m. high, carved on a pedestal.

On the island of SAINTE-MARGUERITE, facing Cannes, Jules Formigé discovered, in 1937, the Roman settlement of Lero.[32] The ancient port, a fishery, and baths along the seaboard could be identified.

At SAINT-PLANCARD (Haute-Garonne), where romanesque paintings of great importance have been discovered,[33] Georges Fouet has brought to light the traces of a Gallo-Roman sanctuary in the vicinity of the church. Numerous votive altars reveal a local god, new to us, *Mars Sutugius*, represented as a warrior. Funerary stelae have also been discovered together with moulded blocs which must belong to the temple itself.

Among the discoveries of isolated objects, three are especially important.

At Saint-Loup (Haute Garonne), Georges Fouet discovered in a Gallo-Roman villa ivory plaques from a coffer or a piece of furniture.[34] The themes are varied: pugilists being stopped by a referee, satyr and maenad, panthers, a head of Serapis. They are probably imported work, since ivories are very rare in Gaul.

At Châteauponsac (Haute-Vienne), M. Baubérot has discovered, in a hollow recess in a funerary monument, interesting bronze decorations from a chariot, with themes of Bacchic nature.[35]

At Maclaunay (Marne), Brisson and Loppin have discovered in a cache a remarkably well preserved set of iron tools: scales, pot-racks, harness-chains, stone mason's tools, a ploughshare, bits of the wheelwright's art, and animals' bells. The deposit dates from the fourth century and gives an idea of the domestic and agricultural property of a small cultivator.[36]

Finally, it should be mentioned that a sport, undersea fishing, which is practiced on the Côte d'Azur, has contributed to archaeological research. Quantities of amphoras and even architectural fragments have been discovered in various parts of the coast, especially the area of Cannes and of Fos-sur-Mer. The "swallowed cities" of the press are more probably ancient vessels sunk with their cargo.

Numismatics.—Pierre le Gentilhomme, of the Cabinet des Médailles, who was prematurely torn away from science in 1947, has reported on two hoards discovered at Nanterre and at Coesmes, consisting mainly of Antoniniani.[37]

[28] *Gallia*, v, 2 (1947), p. 475.

[29] Gilbert-Charles Picard, "Trophées d'Auguste à Saint-Bertrand-de-Comminges," *Mémoires de la Soc. arch. du Midi de la France*, XXI (Toulouse, 1947).

[30] Charles Picard, "La Némésis-Tyché de Vienne (Isère)," *Gallia*, v, 2 (1947), pp. 259–270.

[31] Emile Thévenot, "Sculptures inédites de Chorey (Côte d'Or)," *ibid.*, pp. 427–433.

[32] Jules Formigé, "La station antique de Lero à l'île Sainte-Marguerite (Alpes-Maritimes)," *Gallia*, v, 1 (1947), pp. 146–155.

[33] Jean Laffargue and Georges Fouet, *Peintures romaines, vestiges gallo-romains à Saint-Plancard (Haute-Garonne)* (Toulouse, 1948).

[34] *Gallia*, v, 2 (1947), p. 474.

[35] *Ibid.*, p. 461.

[36] Chanoine P.-M. Favret, "Cachette de ferronnerie à Maclaunay (canton de Montmirail, Marne)," *CRAI*, 1947, pp. 120–128.

[37] Pierre Le Gentilhomme, "La trouvaille de Nan-

Epigraphy.—Pierre Wuilleumier has brought together in a learned report the inscriptions concerning the administration of the Lyonnaise under the Early Empire.[38]

Ceramography.—Three new publications bring valuable information on Greek and Roman amphoras, on Gallo-Roman decorative ceramics, and on the workshop of the potter *Satto*.[39]

Catalogues.—The archaeological inventory of Roman Gaul proceeds in the form of departmental catalogues (Aveyron, Meuse, Meurthe-et-Moselle, Vosges).[40]

Manuals.—The second edition of the *Manuel de Géographie historique de la France*, by Léon Mirot (i, Paris, 1948) is useful for the Roman period.

C. The Barbarian Period (Sixth to Eighth Centuries)

The earliest Christian necropoleis of Provence are examined by Fernand Benoit. They are cemeteries surrounding the suburban churches of Arles. The religious topography of Arles in the sixth century has been precised by Jean Hubert who proves that the cathedral of Saint-Etienne did not stand on the site of today's Saint-Trophime's church, but near the Christian necropolis of Aliscamps.[41]

The Christian capitals of the seventh century in Gaul have been meticulously studied by Mlle. Denise Fossard.[42] Their decorations become increasingly schematized but at the same time show new motifs: flowers, fish, twisted fringes, roses, spirals, and thorny acanthus. These naturalistic themes revive the desiccated Greco-Roman art. They display barbarian and Byzantine influences.

Two barbarian necropoleis were made the objects of schematic explorations. At Estagel (Pyrénées-Orientales), Raymond Lantier excavated a Visigoth graveyard.[43] Forty new tombs were dug in 1946. They occur in little groups corresponding to family groupings, and are separated by regular alleys leading to small esplanades delimited by corner-stones. The plan is analogous to that of modern cemeteries. The dead, their heads to the west, were clothed and sometimes accompanied by a leather purse. The absence of arms and offering vessels implies that the population was already Christianized, although traces of pagan ritual fire are still found in this sixth century necropolis.

At Ennery, Emile Delort has excavated in 1941 a Frankish cemetery of the fourth–fifth centuries.[44] Eighty-two burials contain arms, bundles of toilet articles placed under the skull, funerary obols, and vessels for food. Below the graves were placed quarters of meat. This shows the persistence of Gallo-Roman customs.

At Lyons, in the quarter of Choulans, Pierre Wuilleumier is at present excavating a Burgundian necropolis. Some of the sarcophagi bear inscriptions.[45]

terre," *RN*, ix (1946), pp. 15–114; "Le trésor de Coesmes (Ille-et-Vilaine), la circulation monétaire en Armorique vers 275 ap. J-C., les monnaies officielles, leurs imitations locales et les persistances de l'art celtique," *Gallia*, v, 2 (1947) pp. 319–349.

[38] Pierre Wuilleumier, "L'administration de la Lyonnaise sous le Haut-empire," *Annales de l'Univ. de Lyon* (Lettres), 3d Ser., 16 (Paris, 1948).

[39] Odette and Jean Taffanel, "Marques d'amphores trouvées au Cayla de Mailhac (Aude)," *Gallia*, v, 1 (1947), pp. 143–146; Paul Cordonnier, *Musée céramique de la Reine Bérengère, catalogue des poteries gallo-romaines* (Le Mans, 1939–1946), vi, Supplément: *Erotica;* Emile Delort, *L'atelier de Satto, vases unis, 3.000 marques* (Nancy, 1948).

[40] Maurice Albenque, *Inventaire de l'archéologie gallo-romaine du département de l'Aveyron* (Rodez, 1947); Maurice Toussaint, *Répertoire archéologique du département de la Meuse* (*période gallo-romaine*) (Bar-le-Duc, 1946); *idem*, *Répertoire archéologique du dép. de Meurthe-et-Moselle* (*pér. gallo-rom.*) (Nancy, 1947); *idem*, *Rép. arch. du dép. des Vosges* (*pér. gallo-rom.*) (Epinal, 1948).

[41] In *Cahiers archéologiques* (*Fin de l'Antiquité et Moyen-Age*), published by André Grabar, ii (Paris, 1947): Fernand Benoit, "Cimetières paléochrétiens de Provence," pp. 7–15; Jean Hubert: "La topographie religieuse d'Arles au VI^e siècle," pp. 17–27.

[42] Denise Fossard, "Les chapiteaux de marbre du VII^e siècle en Gaule, Style et évolution," *ibid.*, pp. 69–85.

[43] Raymond Lantier, "Nouvelles fouilles dans le cimetière wisigothique d'Estagel (Pyrénées-Orientales)," *CRAI*, 1947, pp. 226–235.

[44] Emile Delort, "Le cimetière franc d'Ennery (Moselle)," *Gallia*, v, 2 (1947), pp. 351–403.

[45] Pierre Wuilleumier, *CRAI*, 1948 (in press).

SWITZERLAND

By Pierre Bouffard, Geneva

A. Paleolithic Period

The work of H. G. Bandi, *Die Schweiz Zur Rentierzeit* (Frauenfeld, 1947), is an important synthesis.

B. Neolithic Period

Excavations of the lake station of Burgäschi are complete. The study of objects and especially of the ceramics shows that this station belongs to the Early Neolithic Period of Vouga or, to be more exact, to the Cortaillod culture of Vogt. Analytical studies of the pollen have contributed useful information.

Excavations are in process at the station of "Benime" near Chevroux, and at Däniken has been discovered a fortified Neolithic land station and several graves.

The most important Neolithic field is that of Collombey-Muraz, at the place called "La Barmaz," in the Rhône valley. M. R. Sauter of Geneva undertook here a series of excavations which have led to the discovery of a vast necropolis extending from the Neolithic to the Bronze Age. Even though the furnishings of the site are very poor, the disposition of the sepulchres and the anthropological study of the skeletons are of interest. The Neolithic burials are of the contracted type. They consist of schist flags arranged to form a coffer containing one or sometimes two skeletons with knees brought to the chest according to the tradition of the western Alps (pl. xxviii, a).

C. Bronze Age

Among the lake or land stations of this period only one deserves mention. It is the famous station of Crestaulta, in the district of des Grisons. This necropolis contains only incineration tombs, which have yielded bronze pins with both flat and winged heads, of an intermediary type between the disc pins and the trefoil pins of Hungary and the western Alps.

D. Iron Age

Systematic excavations have been undertaken in the large necropoleis in the southern Alps in the district of Tessin.

E. Roman Period

In the course of 1947 little work was done in the great Roman centers of Switzerland. At Augst (Augusta Raurica), restoration work has continued at a slackened pace, at Avenches (Aventicum), the excavation of the amphitheatre is in process; at Nyon, Geneva and Windisch (Vindonissa), the discoveries were accidental and without importance. The *Pro Vindonissa* Society has marked its fiftieth anniversary by publishing a report and a guide to its museum.

F. Early Middle Ages

The region of Basle has revealed anew the wealth of its Alamanian necropoleis, especially those of Alten Gotterbarmweg, Klein-Hüningen and Bernerring. For the first time the tomb of a horse has been found.

Remodelling work done in the abbey of St. Maurice (Valais) led to the discovery of an annex to the early churches. It is a square baptistery with a circular pool, with steps on opposite sides (pl. xxvii, b). It is the first baptistery of the Early Middle Ages found in Switzerland after that of the *Riva san Vitale*, in Tessin in the southern Alps.

The preliminary report of the St. Maurice excavation which appeared in the review *Vallesia*, 1948, does not yet mention the new discoveries but gives a series of plans of interest for the history of sacred architecture in the northern Alps. Useful comparisons may be made with Italy and France, St. Maurice being on the borderline of the two influences.

The Merovingian and Carolingian articles from the hoard of the abbey of St. Maurice will be published in the general report now in preparation.

To the ancient structures of St. Maurice and of Romainmôtier, belonging to the first millennium, should be added those recently discovered at Spiez (Berne) and Riehen (Basle). Churches or chapels are still in question here, since not a single civil construction has been discovered. Finally it should be mentioned that at Basel restoration work done on the apse of the cathedral has led to the discovery of a little chapel with three apses of the Lombard type.

The most delicate problem of this whole period, especially for western Switzerland, is that

of chronology. In fact, until now Burgundian objects were always dated from the sixth and seventh centuries, thus creating a vacuum of one century between the end of the Roman period and the arrival of the Burgundians.

BELGIUM, HOLLAND, AND LUXEMBURG

By Pierre Hombert, Brussels

A. Prehistory and Protohistory

Belgium

The most ancient objects from the quarry of Marousset, Bois de la Houssière at Braine-le-Comte, form the transition from the Clactonian to the Levalloisian periods; they are found in the third geological layer (interglacial Riss-Würm). At the end of the Würm appears an industry with the character of the final Levalloisian and initial Aurignacian. Polished axes in flint of Spiennes were found in the fifth, post-glacial geological layer.[1]

At Goyet (Province of Namur), an additional pedunculate point of the type Font-Robert (Aurignacian), rare in Belgium, has been discovered.[2]

At Ampsin (Province of Liège), in the calcareous mountains of the left bank of the Meuse, have been found Neolithic objects belonging either to the microlithic or the Michelsberg culture.[3]

Not far from the first dolmen of Wéris (Province of Luxemburg) Mlle. Danthine has discovered a menhir measuring 3.60 m. She believes that there was a megalithic field between Oppagne and Heydt.[4]

A recent study of A. E. Van Giffen[5] of the Bell- or Disc-Barrows of the Netherlands, drew the attention of M. E. Mariën to two similar tumuli in Belgium. The first, which corresponds to the type of the Disc-Barrow, is the "Tuudsheuvel" near Wijshagen. The second, a Bell-Barrow, is the "Heksenberg" near Wijchmaal.[6]

[1] J. Baudet, *BSPF*, xliii (1946), pp. 120–124.

[2] Louis Éloy, *ibid.*, xl (1943), pp. 194–196.

[3] J. Joseph Gérard, *ibid.*, xliii (1946), pp. 124–130.

[4] Hélène Danthine, *AC*, xvi (1947), p. 358.

[5] A. E. Van Giffen, *Proceedings of the Prehistoric Society*, xii (1938), pp. 258–271.

[6] M. E. Mariën, *AC*, xvi (1947), pp. 358 f.

The oppidum of Chévremont (Province of Liège), where the Service des Fouilles began investigations in 1943, proves to have been in use from prehistoric times to the tenth century.[7]

M. E. Mariën, who is at present studying the Hallstatt burial mounds of Court-St.-Etienne (Brabant), has called attention to two pieces of interest. Mound D of the "Champ de la Ferme Rouge" contained a goad, consisting of a wide stem ending in a tridentate fork. This object belongs to the Halstatt D period (end of seventh–sixth centuries). The same grave also contained a horse's bit (*AJA*, lii, p. 208). It would seem, therefore, that at the end of the Hallstatt, the war-chariot was already in use in Western Europe. In the second place, M. E. Mariën has discovered three bronze objects, "porte-ceinturons" which can be compared to the "winged chapes" discovered in the lake of Llyn Fawr, in Wales, of the Hallstatt C.[8]

Holland

At Hooghalen (Drente), excavations concern a devastated megalithic monument, a tomb with stone sarcophagus, a Bronze Age tumulus surrounded by wooden stakes, and a cremation tumulus. The urn field of Sleen (Drente) has yielded a ditch in the form of a key-hole, the first example of this known in that region. W. C. Braat excavated an urn field at 's Heerenberg (Gueldre) and C. C. W. J. Hijszeler another very important one at Oldenzaal (Overijssel). The Neolithic tumuli of Schaarsbergen (Gueldre), were excavated in 1947 and in 1948 by W. Glasbergen, and in 1948, those of Hapert (Noord-Brabant).

In a report published in 1946, Professor A. E. Van Giffen discusses two old excavations.[9] The first, made in 1929, was the study of a megalithic monument in the "Pottiesbargien" at Diever. The second, in 1924–1925, concerned a Neolithic tumulus in the hamlet of Rhee at Vries. In it were found a secondary cremation of the Bronze Age, another secondary incineration which is not dated, and the remains of dwellings dating from the end of the Bronze Age or the Iron Age. In

[7] J. B(reuer), *ibid.*, pp. 127 f.

[8] M. E. Mariën, *Bulletin des Musées royaux d'Art et d'Histoire*, 3d Ser., xviii (1946), pp. 16–28.

[9] A. E. Van Giffen, *Nieuwe Drentsche Volksalmanak*, lxiv (1946), pp. 61–88.

1944, a tumulus at NORG was the object of an interesting enquiry.

In 1947, Van Giffen reported on an excavation which he carried out in 1929.[10] The Eneolithic tumulus of ODOORN was surrounded by a double circular ditch, the central part in the shape of a bee-hive. This structure is very similar to that of the tumulus of Porz-Ar-Saoz at Trémel (France, Côtes-du-Nord). The grave-goods included a tanged knife-dagger and ornaments in bronze and gold.

H. Hardenberg has started working on the pre-Carolingian oppidum of Landgraaf, on the heath of HEERLEN (Dutch Limburg).[11] The fortified enclosure has a total circumference of 20 km. Its Celtic name of Coriovallum later became that of a Roman city near Heerlen. Hardenberg believes, therefore, that this oppidum was pre-Roman.

B. ROMAN PERIOD

BELGIUM

The Gallo-Roman necropolis of PÉRONNES-LEZ-BINCHE (Hainaut) was excavated in 1917, unfortunately under bad conditions. Its relics, conserved at the Musée de Mariemont, have a special interest because of the early Belgian ceramics, belonging to the Augustan period. The Romanization of the central part of the Civitas Nerviorum was rapid. Celtic survival in the form and decoration of vases is striking.[12]

In our preceding summary (*AJA*, lii, pp. 212 f.) we have mentioned numerous discoveries made at TOURNAI. Near the church of Saint-Piat on the Rue de Coutrai, were found potsherds dating from the end of La Tène to A.D. 10. In the garden of the bishopric, a wall of the end of the first century was located, constructed on the site of an older lime-kiln. In the foundation trench of the wall was a potsherd of Arretine sigillata (Dragendorff 25, 26).[13]

In the "Bois de Bertrandsart," at GERPINNES (Hainaut), not far from the road Charleroi-Philippeville, fragments of tiles, of millstones, and of Roman pottery have been found in a wooden house of the first or the early second century.[14]

During the month of September, 1948, at COMBLAIN-AU-PONT (Province of Liège), in the "Campagne du Raideux," were discovered in the remains of a Roman villa tiles, gutters, nails, bones, sandstone flags, calcined wood, slag, potsherds, and decorated sigillata of the second or third centuries.

A tumulus of CORTIL-NOIRMONT (near Gembloux) yielded, 75 years ago, a glass oinochoe, a lizard in rock-crystal, and a shell in dark amber. M. E. Mariën has now dedicated an interesting investigation to the symbolism of the funerary shell. The latter should assure the dead of Venus' protection during the voyage to the Islands of the Blessed.[15]

The findings at HOFSTADE (Western Flanders; cf. *AJA*, lii, p. 213) have now been published.[16] The sigillata comes mainly from La Graufesenque; some sherds are from Lezoux. The whole collection dates from A.D. 70 to 105; the major part falls between 81 and 96. Belgian ceramics consist almost exclusively of terra nigra. Terra rubra is very rare; it was, in fact, hardly used after 70. Many pitchers and other ceramic products confirm the date furnished by the sigillata. The glassware belongs to the first century, as far as it is possible to establish. A terra cotta statuette, originating in the Allier, reproduces the *spinario* type. It is identical with those of Arentsburg (Holland) and of Heddernheim (Rhineland). Among objects of iron, we may mention a magnificent sword of the *gladius ibericus* type. During the autumn of 1947, S. J. De Laet discovered a Roman building which had been destroyed by fire, probably in the second half of the third century.

In March, 1948, at ARLON, the Roman Orolaunum, work on a housing project cut into a Roman rampart of the third century, and led to the discovery of three Roman reliefs.[17] One of these represents a Bacchic scene under a trellis: at the left, a young man plays the flute, at the right, a woman shakes a tambourine. The two other pieces are fragments of entablatures deco-

[10] *Ibid.*, lxv (1947), pp. 79–135.

[11] H. Hardenberg, *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap*, lxiii (1946), pp. 737–753.

[12] G. Faider-Feytmans, *AC*, xvi (1947), pp. 79–104.

[13] *Ibid.*, p. 102, n. 3 (comment of M. Amand).

[14] J. B(reuer), *ibid.*, pp. 130 f.

[15] M. E. Mariën, *Bulletin des Musées Royaux d'Art et d'Histoire*, 3d Ser., xvi (1944), pp. 113–120.

[16] S. J. DeLaet, *AC*, xvi (1947), pp. 287–306.

[17] Information furnished by A. Geubel.

rated with geometric motifs. Other stones were located in the rampart, but have not been freed.

Later, in April, during the enlargement of a pharmacy on the main street, the rampart was reached again, but it was badly preserved in that section. A half dozen stones belonging to Roman monuments were removed; among these, two second-century tombstones, one of TACITIUS DERISSORIS, and the other of SATTONIS.

Nearby the searchers came across a section of the enceinte including the remains of a tower, or rather of a semi-circular salient turned towards the interior or the city, and a part of the curtain, both preserved at a height of about 4 m. (pl. XXVIII, B). In the foundations of the tower were discovered reliefs, the baby Hercules strangling two serpents and a dancing woman. In addition, a polychrome bloc offers an architectural ornament showing the profile of an admirably executed cornice.

We have mentioned in our preceding summary (*AJA*, lii, p. 213) the discovery of an inhumation burial at TONGRES. The dead was buried in a wooden coffin, of which only six nails are preserved. The tomb contained an urn and two earthenware plates. They belong to the fourth century and seem to be related to the ceramics referred to as those of Urmitz.[18]

HOLLAND

Completing the great work *Excerpta romana*, A. W. Bijvanck has just published volume iii (1947). It comprises a complete bibliography of archaeological discoveries of the Roman period in the Netherlands. The Roman roads of Holland have been the object of studies by H. Hardenberg.[19]

The excavations at VALKENBURG since 1941 have brought to light six super-imposed Roman camps. Further details are available, without changing the essentials of the report of last year (*AJA*, lii, pp. 215 f.). The gates have been explored, and many buildings of the camps, including the *principia* and *praetoria*.[20]

The excavations of the Roman camp of VECHTEN have been continued in 1947 (*AJA*, lii, p. 216).[21] The first results indicate seven successive periods of occupation, the first going back to Augustus' reign. The fort may owe its origin to Drusus' campaign against the Germans. Soundings gave a possibility of determining the old profile of the Rhine.[22]

According to H. Hettema,[23] Drusus improved the canal leading towards the Vecht, passing through the Neder-Rijn and the Kromme-Rijn. In addition, he caused the digging of a branching canal towards the IJssel. He does not believe that during that period the river-route passing through the IJssel was being used.

At HORN (near Roermond, Limburg), an altar dedicated to Mercurius Arvernus was found a little over a century ago. On the main face of this monument, the Arvernian national god is represented in a sitting position. The pose symbolizes the omnipotence of the divinity. The goat lying on the knees of the god and the turtle on which Mercury's feet repose, represent the divine force upholding heaven. H. Hardenberg believes that this altar represents a copy of the statue executed by Zenodorus for the temple of Clermont-Ferrand.[24]

The Batavian village of HUNERPARK (Nimègue; cf. *AJA*, lii, p. 216) was inhabited from the beginning of the first century of our era to about A.D. 70. It is then that the Romans erected their

[18] H. V(an) D(e) W(eerd) and S. J. D(e)L(aet), *AC*, xvi (1947), p. 130.

[19] H. Hardenberg, "Bijdragen tot de Geschiedenis van Limburg in den Romeinschen Tijd. I. De Plaatsen aan den Romeinschen Weg Nijmegen-Tongeren," *De Maasgouw*, 1944–1945, pp. 40–51; "Het Limburgsche Gedeelte van de Romeinsche Heirbaan Keulen-Tongeren," *ibid.*, 1942, pp. 1–6, 23–29; cf. J. Habets, "Découvertes d'antiquités dans le duché de Limbourg," *Publications de l'ancien duché du Limbourg*, xviii (1881), pp. 195 f.; J. Vannerus, "Deux stations de la route romaine de Nimègue à Tongres: Catualium et Feresne," *Académie royale de Belgique, Bulletin de la classe des lettres*, 5th Ser., xxv (1939), pp. 141–169.

[20] A. E. Van Giffen, *25°–28° Jaarverslag van de vereeniging voor Terpenonderzoek (1940–1941 to 1943–1944)*, pp. 1–316; cf. for the events of A.D. 47 W. Glasbergen, *Jaarboekje voor Geschiedenis en Oudheidkunde van Leiden en Omstreken*, 1948, pp. 88–93.

[21] A. E. Van Giffen and W. Glasbergen, *Bulletin van de Nederlandsche Oudheidkundige Bond*, 5th Ser., 1 (1948), pp. 99–101.

[22] A. E. Van Giffen and W. Glasbergen, *AC*, xvi (1947), p. 366.

[23] H. Hettema, *Tijdschrift van het Nederlandsch Aardrijkskundig Genootschap*, 2d Ser., lxii (1945), pp. 148–156.

[24] H. Hardenberg, *AC*, xv (1946), pp. 5–42.

fortress of Hunerberg.[25] The Batavian site was occupied well into the course of the fourth century. The sherds include sigillata of Arezzo and of Graufesenque and fragments of terra nigra urns belonging to the third and fourth centuries. The Belgian ceramics are also numerous, but not the products of Xanthen or of Holdeurn.

W. Glasbergen has published a publication on sigillata of the province of Groningen, outside the limits of the empire.[26] The most ancient potsherds are those of Graufesenque, and belong to the period of Domitian; a few from Lezoux can also be placed at the end of the first century. [27] From the year 100 to 140 there seems to be no increase in imports. It is only between 140 and 150 under the reign of Antoninus Pius that regular commercial relations were established; they continued to increase, to reach their peak shortly after 175. At this time, the ateliers of Lezoux are only sparsely represented. The majority of the potsherds are from the eastern Gaul and mostly from Trier.

At the beginning of the second century, the importations come mainly from Rheinzabern. After 260, sigillata disappears as a result of the abandoning of the limes. Importation is resumed in the fourth century as is attested by the finding of several rare specimens of decorated ceramics from Argonne. To this same period and to the fifth century belong several potsherds—which Zeiss calls "Mittelmeersigillata." They show commercial relations between the Saxons established in the province of Groningen and Spain and North Africa. These conclusions correspond, in principle, to those of Boeles for the province of Frisia,[28] and to those of Miss Brogan, for free Germany.[29] It should be noticed, however, that the provinces of Drente[30] and of Twente,[31] located more to the south, have yielded only a very small number of potsherds.

C. Merovingian and Mediaeval Periods

Belgium

H. Roosens has published an article on the method of studying Merovingian tombs (cf. *AJA*, lii, p. 217).[32]

The Merovingian necropolis of Trivières (Hainaut), has been excavated several times, in 1865, 1900, and 1908. Part of the objects collected are at the Mariemont Museum. Among these there is a beautiful collection of brooches. Mme. Faider-Feytmans has already published a report on some of them.[33] H. Kühn devoted a study to them at the beginning of the war,[34] finding that in Belgium, Anglo-Saxon and Lombard influences are equally manifest.

During the autumn of 1941, a small Merovingian cemetery was excavated at Tertre (Hainaut), dating from the end of the seventh century.[35]

Until now, a prehistoric origin was attributed to the fortification of Boubier, which extends into the territories of Chatelet, of Couillet and of Bouffioulx (Hainaut). Here excavations were conducted by J. Breuer in 1944.[36] Despite the presence of a few Neolithic flints, he does not believe it possible to assert the great antiquity of this site. The pottery fragments are recent (eleventh-twelfth centuries).

At Beveren-Waas (East Flanders), the present day parish church contains only a few vestiges of the old romanesque church which was built in the form of a cross, with three naves and a rectangular choir. Due to the remodelling of

[25] J. H. Holwerda, *Oudheidkundige Mededeelingen*, N.R., xxvii (1946), pp. 5–27.

[26] W. Glasbergen, *25°–28° Jaarverslag van de Vereeniging voor Terpenonderzoek (1940–1941 to 1943–1944)*, pp. 317–368.

[27] On the other hand, Frisia yields Arretine sigillata and pottery from southern Gaul, due to the short Roman occupation at the beginning of the first century of our era (A.D. 14–28) and to the expedition of Cn. Domitius Corbulo against the Chauci in A.D. 47. Cf. the article of Glasbergen cited above, n. 20.

[28] P. C. J. A. Boeles, *Friesland tot de Elfde Eeuw* (La Haye, 1927), pp. 99–104.

[29] O. Brogan, *JRS*, xxvi, (1936), pp. 195–222.

[30] W. Glasbergen, *Nieuwe Drentsche Volksalmanak*, lxiii (1945), pp. 135–144.

[31] *Ibid.*, p. 140.

[32] H. Roosens, *Handelingen der Maatschappij voor Geschiedenis en Oudheidkunde te Gent*, N.R., iii (1948), pp. 69–87.

[33] G. Faider-Feytmans, *Annales du XXXI° congrès de la Fédération archéologique et historique de Belgique* (Namur, 1938), pp. 236–241.

[34] Herbert Kühn, "Die Fibeln von Trivières," *IPEK*, xv–xvi (1941–1942), pp. 268–270.

[35] G. Faider-Feytmans, *RBA*, xii (1942), pp. 113–130; J. B(reuer), *AC*, xi (1942), p. 304.

[36] J. B(reuer), *AC*, xvi (1947), p. 127.

the church in the Gothic period, then in the sixteenth, seventeenth, and nineteenth centuries, nothing is left of the original edifice except the octagonal tower with its rectangular base, and the east wall of the transept.[37]

The digging of reservoirs for an Antwerp firm at WAELHEM-LEZ-MALINES, uncovered, at a depth of several meters, the remains of masonry. It is supposed to be the fortified castle that Gilles Berthout, Lord of Duffel, constructed in the twelfth century.

Researches conducted at AUDENARDE in the "House of Marguerite de Parma,"[38] revealed the existence of an earlier romanesque construction. This was in the form of a large square tower, and must have been analogous to the Château des Comtes at G-hent.

LUXEMBURG

In 1944, the Museum of Luxemburg acquired the grave-goods of a Merovingian cemetery of GREVENMACHER. One may mention a discoid clasp of gold of the seventh century.[39]

HOLLAND

At RIJNSBURG on the Rhine, W. C. Braat[40] has examined a plot of ground near the site of the old abbey. There he found several skeletons and traces of dwellings. The ceramics belong mainly to the Carolingian period (ninth and tenth centuries). Several Merovingian and even Roman potsherds were also found. Not far from this site the Germans, in 1944, constructed a small fort. In the course of this construction appeared a segment of a brick well, a part of a stone construction and the remains of a Mediaeval spiral stairway.[41]

The excavations of Mediaeval buildings continue in Holland. In a recent article, P. Glazema[42] gives new details on a certain number of these. The first church of OOSTERBEEK, which is Carolingian, was completely rectangular on the outside. On the inside, it terminated in three apses, the largest in the center. The roof was of tiles. In the twelfth century (romanesque period), the sanctuary was enlarged by the adjunction of a semi-circular choir narrower than the nave. Two hundred years later, the romanesque choir was replaced by a brick polygonal choir. In the fifteenth century a large square tower succeeded the romanesque tower, while in the nineteenth century the church was notably expanded. Since then its plan has been in the shape of a cross.

In the course of the restauration of the choir in the church of VRIES (Drente), were found vestiges of an earlier semi-circular church. A children's cemetery was in the choir. Under the ruins of the church of HORST (excavated in 1947) were discovered the remains of a nave, ending in a rectangular choir. Under this the excavators have found, besides unfurnished tombs, the evidence of stakes, leading to the assumption of the existence of a more ancient wooden place of worship.

We have already spoken of the Catholic church of St. Médard at WESSEM, near Roermond (*AJA*, lii, p. 220). The Gothic church of the fourteenth century, which comprised three naves and a polygonal choir, had followed a romanesque edifice of the twelfth century, with three naves and a transept. The choir was circular and flanked by two lateral chapels. The columns separating the three parts of the nave were topped by Ionian capitals; this led to the belief that the church of Wessem existed before the romanesque period. This hypothesis was reenforced when a pre-romanesque choir was found within the romanesque one. This earlier choir was rectangular on the outside but circular inside. If the columns with the Ionian capitals are a part of this edifice and have not been brought from outside, then the first church of Wessem would have had also comprised three naves.[43]

[37] Van Driessche, *Annalen van den Oudheidkundigen Kring van het Land van Waas*, lv (1947–1948), pp. 57–73.

[38] Marguerite de Parme, natural daughter of Charles V, was born at Audenarde in 1522.

[39] Joseph Meyers, "Aperçu sur l'histoire du Musée," *Publications de la Section historique de l'Institut grand-ducal de Luxembourg*, lxix (1947), p. 19.

[40] W. C. Braat, *Jaarboekje voor Geschiedenis en Oudheidkunde van Leiden en Omstreken*, 1947, pp. 67–76.

[41] W. Glasbergen, *ibid.*, pp. 77–81.

[42] P. Glazema, *Bulletin van de Nedelandsche Oudheidkundige Bond*, 5th Ser., 1 (1948), pp. 102–109.

[43] P. Glazema, *Publications de la Société historique et archéologique dans le Limbourg*, lxxxvii (1947), pp. 237–244.

The original sanctuary of BEEGDEN consisted of a rectangular oratory, but had no clear indication of a choir. Later it was extended towards the west forming a nave; at the eastern side was added a rectangular choir narrower than the nave. Later, still, the choir became polygonal and elongated. The brick church devastated by the war dates from the nineteenth century.[44]

The excavation of the church of BUGGENUM proved to be extremely interesting. The Gothic church, at present obliterated, succeeded an edifice built of stone, in the midst of which were found both Roman cement and Roman tiles, which are probably from a neighboring building. The characteristics of this church were: one nave, one western tower, and a rectangular choir narrower than the nave. Just as at Wessem, Oosterbeek and Janum, the bell had been cast on the spot. Still more ancient is an edifice made of wood and having clay walls in which were found a great number of stake perforations. Unfortunately it was impossible to establish the plan of this building which had been destroyed by fire.

At GEISTEREN, P. Glazema has studied the church of St. Willibrord, under which were found the remains of an earlier edifice. The general arrangement is the following: originally there was only one rectangular nave; this nave was expanded toward the east by a choir. This first church had been built on an artificial elevation of about one meter. Archaeological examination revealed that this elevation was resting on an older level, dating from the seventh and eighth centuries. Ceramics, traces of fire, animal bones, and traces of construction in the form of stake-holes raised the question whether the Christian church did not succeed a pagan sanctuary.

The first church of GRUBBEVORST was made of wood; its nave was square. It was subsequently augmented by a circular choir resting on piles. Gradually this primitive masonry was replaced by a church made of stone, with a polygonal choir narrower than the nave. Finally, a choir, also polygonal and larger, replaced the old one.

At HERKENBOSCH, the modern church has also succeeded another, older one. At HERTEN, the construction of a Gothic church had completely destroyed the old sanctuary, in such a way that it is impossible to restore its plan.

The primitive church of MAASNIEL consisted of a nave with a rectangular choir narrower than the nave, resembling that of Beegden and of Buggenum. Later the church had two, then perhaps three naves; the shape of the enlarged choir did not change. The naves were separated by thick pillars. Just as at Buggenum, the presence of cement and tiles of the Romans was observed in the masonry. At a subsequent period, a tower was added in the western part. The third architectural phase is represented by a brick church with polygonal choir. It was expanded in the course of the nineteenth century and destroyed in 1944.

Other churches of the Dutch Limburg have been excavated by P. Glazema. Among them are those of BLERIK, LOTTUM, MIDDELAAR, TIENRAAY and VENLO.

At EGMOND-BINNEN (North Holland), excavations conducted in the ancient Benedictine abbey, have indicated three periods of construction. In addition, under this Mediaeval edifice, were found the remains of a Canninefate dwelling from the Roman period.[45]

GERMANY

PALAEOLITHIC TO LA TÉNE

By Lothar F. Zotz, Institut für Urgeschichte, University of Erlangen

Illicit digging for archaeological materials, and the destruction or scattering of prehistoric finds, are forbidden by law in the German provinces. The regulations are strict, the "Bodendenkmalpflege" being based on the national desire for cultural reconstruction after the first world war. In every province there is a state institution with specialized and technical facilities to preserve chance finds and make them available to the public and to scholars. Silesia was particularly successful. In Ratibor, Breslau, and Görlitz there were large "Landesämter für Vorgeschichte" with well-organized collections. In the Breslau collection alone there were over 20,000 pots from the Lausitz graves.

[44] For this and the following churches cf. P. Glazema, "Oudheidkundige Opgravingen in Limburg," *De Maasgouw*, lxvii (1948), pp. 31–64.

[45] A. E. Van Giffen and W. Glasbergen, *AC*, xvi (1947), p. 366.

Until 1943, finds and excavations were reported in the *Nachrichtenblatt für Deutsche Vorzeit* under the editorship of Martin Jahn, who until 1945 was professor of prehistory in Breslau.

The present report necessarily concerns itself only with the more important items.

A. Palaeolithic

It is well-known that Himmler was much interested in prehistory, and there were special excavation units in the SS. With one of these, A. Bohmers, undertook shortly before the war a considerable excavation in the Weinberg caves of Mauern (Kr. Neuburg on the Danube) in Bavaria. Below a Neolithic he found three Palaeolithic levels, Mousterian at the bottom, on bed rock, then a level with laurel 'leaf points' and finally a Magdalenian level. In the intermediate level, thirty double leaf points were found, some of them clearly related to the "Altpaläolithikum mit Blattypen" as it occurs in the Bavarian Altmühltal,[1] while others were technically so developed that they can be compared to the best types of West European Solutrian. Bohmers would date the latest of these points to the Inter-glacial Period, and he has spoken of a single "Altmühlkultur." This culture would then stand in a close relation with the leaf-point culture of the Ilsen cave in Ranis,[2] which is also claimed as Inter-glacial. This conclusion, however, cannot be maintained. The only reliable methods of determining the age of cave sedimentation were worked out by R. Lais.[3] Since 1947 they have been employed with success in Mauern in new excavations conducted by the Institute of Pre-History of the University of Erlangen. This leaf-point culture is of not merely regional significance. Some of the points are obvious prototypes of the Solutrian shouldered points.

For a long time the mistaken notion had prevailed that there were no Palaeolithic remains in the North German plain. Since this was refuted by A Rust,[4] Magdalenian finds are now recognized in Brandenburg.[5] To the east, in the regions of Züllichau and Bomst, Dobrindt assembled a wonderful collection of Mesolithic flints, and shortly before the war was able also to establish the existence of the Late Palaeolithic as far as the Elisentaler-See near Unruhstadt. This is apparently a Magdalenian of the Hamburg facies, and in any case, is not Swiderian, as one might expect. Unfortunately the manuscript describing these finds prepared by Dobrindt and his assistant, Liebetraut Gahrau-Rothert, which was to have been printed in the annual *Quartär*, was burned in the bombing of Freiburg. The same fate overtook a long manuscript by the well-known East Prussian pollen-analyst, Gross, on the subject of the Old Stone Age in East Prussia. Fortunately, a shorter article by the same scholar had been published shortly before.[6]

B. Mesolithic

From almost no other culture period have so many finds been made during the past ten years as from the Middle Stone Age. Accumulation of usually microlithic flint implements continued during the war. In East Brandenburg, Dobrindt had discovered by 1940 no fewer than 148 Mesolithic sites in the vicinity of Unruhstadt. From 46 of these he had obtained 10,000 flints. This collection, which I myself saw, was certainly one of the best and richest in Europe, but it also was swallowed up by the vortex of war before being thoroughly explored. An earlier publication of Dobrindt and L. Rothert, nevertheless, has showed the importance of the Middle Stone Age settlements along the Obra river. They belong to the Swiderio-Tardenoisian.[7]

From the East Prussian moors have come, among other things, several stag-antler axes, bone harpoons, and a bone point with microliths still in place.

In South Germany Seitz extended his investigations in the Donaumoos near Ingolstadt, concerning which he has already made a report.[8]

[1] H. Obermaier and P. Wernert, *Mitteil. d. Anthr. Ges. Wien*, lix (1929), pp. 293 ff.

[2] W. Hülle, *Jahresschrift f. d. sächs.-thüring. Länder*, xxiv (1936), pp. 24 ff.

[3] R. Lais, *Quartär*, iii (1941), pp. 56 ff.

[4] A. Rust, *Das altsteinzeitliche Rentier-Jägerlager Meiendorf* (Neumünster, 1937).

[5] Liebetraut Rothert, "Magdalenien in der Mark Brandenburg," *Quartär*, iii (1941), pp. 109 ff.

[6] H. Gross, *Prähist. Zeitschr.*, xxx/xxxi (1939/40), pp. 39 ff.

[7] L. Rothert and C. Dobrindt, *Mannus*, xxvi (1934), pp. 220 ff.

[8] J. Seitz, *Bayrische Vorgeschichtsblätter*, xv (1938), pp. 64 ff.

The existence of two Mesolithic groups have been determined, an earlier with obvious Magdalenian connections and a later, with few typical microliths and mixed with what is called in Germany "Grobkultur," which provides a transition to the Neolithic.

Research in northern WÜRTTEMBERG has revealed a wider and purer Tardenoisian culture, in an area where the Mesolithic was formerly unknown. Large numbers of microliths of imported Jura flint have now been found near Ellwangen and Schwäbisch-Gmünd. Among them are a few pierced pendants of imported stone. One has the shape of a phallus, another has eye-like piercings. An ammonite shell is pierced in the center to serve as a pendant. The magical value of all these items is illustrated in the comprehensive work of G. Wilke.[9]

These discoveries connect the region of Stuttgart with the much explored central Frankish area of Ansbach,[10] from the point of view of the history of settlement. If we look at the Tardenoisian centers in Upper Swabia, on the Federsee, on the Bodensee, in the Bavarian Donaumoos, we can recognize a Mesolithic settlement which covered practically all of southern Germany. We must remember that the eastern, Frankish-Swabish area is linked to the western area in Baden on the Upper Rhine by chance finds in the Hochschwarzwald.[11] This brings the southern region in line with northern Germany, where a thick net of Mesolithic sites has been known for years.

The latest explorations of south Baden in the slopes of the Schwarzwald south of Freiburg were made over the period 1938–1948 by O. Vogelgesang, and revealed several Mesolithic cultures. The richest areas lay around the village Bollschweil, where over 5,000 objects were recovered.[12] Three sites are sharply differentiated. "Fundplatz A" is practically free from the microliths of the middle and late Tardenoisian. On typological grounds, the investigator connects it with the north-west European "Stielspitzen" group. One small site yielded twenty-two "Stiel" and "Zonhoven" points, large gravers suggesting the Palaeolithic, blades, Kernstones and Kernstone planes, blade scrapers, and pendants in the form of pierced Cyprae mussels. Impressive is the relatively large number of borers. In connection with the gravers and prong-like objects, they suggest an active industry in bone. There are no geometric microliths at all, although they are common in "Fundplatz B," adjacent to the north-east. In general, the materials of the tools are identical with those of the raindeer hunters of Munzingen in the Breisgau.

"Fundplatz B" extends over several miles from Bollschweil past Ehrenstetten and Kirchhofen, and follows the course of Möhlin river as far as the vicinity of the village Mengen. It has yielded the gay-colored microliths of all three phases of the Tardenoisian, well-known from Säckingen on the Upper Rhine, from the Federsee, and from the western shore of the Bodensee.

"Fundplatz C" adjoins "B" to the east. It is relatively small, and has produced only some 400 objects, which Vogelgesang would connect with the so-called Jura culture. Utensils are poorly made of shell-limestone and hornstone.

In central Germany, the Mesolithic is represented by three unusual graves at Bottendorf (Kr. Querfurt). The burials were contracted, upright, bedded on ruddle; one grave contained two children, another a third, while the third grave contained an adult. The skull of the last corresponds to the known Cro-Magnon type of Obercassel near Bonn. The grave furniture consisted of typical microliths, which were also found in the vicinity of the graves. It is not impossible that these burials, unusual for central Europe, belong to the north-Eurasian Neolithic culture of the "Kammkeramik." In contrast to the usual central European peasant cultures, they represent the phase of the Mesolithic nomads.

C. NEOLITHIC

Already, Hans Seger had recognized the Jordansmühl culture as an eastern German branch of the Theiss culture. The connections are not due to trade with the lower Danube regions, but rather to the expansion of settlements northward. This was proved shortly before the

[9] G. Wilke, *Die Religion der Indogermanen in archäologischer Beleuchtung, Mannus-Bibliothek*, 31 (Leipzig, 1923), p. 14.

[10] C. Gumpert, *Fränkisches Mesolithikum, Mannus-Bibliothek*, 40 (Leipzig, 1927).

[11] R. Lais, "Die Steinzeit in Schwarzwald," *Badische Fundberichte*, xiii (1937), pp. 29 ff.

[12] O. Vogelgesang, *Der mittelsteinzeitliche Wohnplatz Bollschweil* (Freiburg i. Br., 1948).

war for the Eneolithic Period. A grave was found during mining operations in OBERJOHNSDORF (Kr. Reichenbach) in the midst of the Silesian black-earth region. The grave pottery seemed at first entirely foreign to Silesia. W. Nowothnig showed soon after that this pottery was typical for the culture of Bodrogkeresztur[13] and Pustaistvanhaza. There were no metal objects in the grave; nevertheless this find sheds new light upon the copper objects found in eastern Germany earlier. Some of the latter correspond closely to those found in Hungary, even in details of ornamentation. A grave found on the right shore of the Oder in Strehlitz (Kr. Namslau) contained objects of a type thus far unknown in Germany: "bolt-like" bone points known only in the Bandkeramik of Hungary.

A definitely Neolithic—probably a Schnurkeramik—grave was found in Southern Germany in ALTHAUSEN near Mergentheim, in Northern Württemberg. A mother and two children were buried there together; the latter were apparently forced to follow the dead woman into the grave.[14]

A Neolithic jasper quarry—an unusual find—was discovered in southern Baden, close to the Swiss border near Basel. R. Lais has described it in detail.[15] Prehistoric fragments, animal bones and a human skull were found near the station Kleinkems in the ISTEINER KLOTZ region.

Planned digging was begun in 1940. A small cave containing a contracted burial of the Michelsberg culture was discovered. In the fill within and before the cave were many pebbles from the Rhine gravel, some worked as implements. These were mainly primitive axes and hammers of quartzite and siliceous limestone, some shaped like chisels. Many of these are worn and the numerous fragments prove a lively activity. Many small and even tiny jasper fragments occurred in the walls of the cave.

These are not of natural origin, nor were they cut by man with the object of making implements. They are debris of the smaller jasper lumps which were broken during the quarrying of the cave and the cliff walls. The laboratory experiments of Lais have proven that these fractures could have occurred only through the action of fire. This would agree with the fact that in some parts the cliff is strongly reddened or blackened. The cave contained layers of charcoal but no actual culture layers. Most of the charcoal comes from wild vine. Step by step it was proved that this cave and probably also other caves in the Isteiner Klotz, which could not be investigated before their destruction, represented Neolithic jasper quarries. The quarrying was done with the help of fire by the same method as was used in prehistoric copper quarrying near Salzburg.

Rock splinters blasted by powerful fires from the walls of the cliff were demolished with heavy quartzite sledges. This find furnishes the final proof that man of the Neolithic knew how to set fire. Even Lais himself believed until recently that the existence of a Neolithic quarry in the extremely hard and resistant coral limestone of the Isteiner Klotz was out of the question. When quarrying came to an end, a contracted burial of the Michelsberg culture was made in it.

D. BRONZE AGE; THE HALLSTATT PERIOD

The central European Bronze Age is divided into three cultural areas, comprising respectively northern and northwestern Germany, eastern and central Germany (Lausitz), and western and southern Germany.

The Northern Area

Most of the prehistoric monuments on the Island of SYLT were destroyed during the construction of an air base, but had been already investigated by K. Kersten. One of the tumuli of Tinnum contained a tree-coffin 2.10 m. long, supported all about by large stones. Pl. XXX A and B show similar phenomena in Schleswig-Holstein. It was the burial of a woman of the Early Bronze Age (Montelius II). She wore a ribbed bronze collar; a brooch lay on her right chest, a large plaque ornamented with spiral design and a smaller flat belt buckle on her body. A plain bronze bracelet encircled her left arm, a spiral her right arm.

The barrow of Kampen on the Island of Sylt was 4.50 m. high, and consisted of four successive levels. The oldest contained a stone pavement and a stone circle. In the center lay a stone box,

[13] J. Hillebrand, *Prähist. Zeitschr.*, xiii (1926), pp. 13 ff.

[14] G. Wilke, *Die Heilkunde in der europäischen Vorzeit* (Leipzig, 1936), pp. 127 ff.

[15] R. Lais, *Die Höhle an der Kachelfluh bei Kleinkems* (Freiburg i. Br., 1947).

FIG. 1. GIRL OF THE EARLY BRONZE AGE. AFTER L. ZOTZ.

and other stone boxes were scattered around. The floors of these boxes were paved with tiny quartz pieces, 1–2 cm. in diameter. In one was found a rhomboid sword sheath, a double button, pincers and a pin, all of bronze, together with melted glass beads and an earthenware vessel with two handles. The grave furniture belongs to Montelius III, while the architecture and arrangements reveal the strong tradition of the megalithic culture of the northern Neolithic.

Other graves in HOLSTEIN, near the village of Barlt in Dithmarschen, were similar. In one the burnt remains had been placed on a stone paving, with a "vollgriff" sword of the bronze Period III with a wooden sheath. Another contained an unburned corpse which had worn woolen clothes,[16] and a "vollgriff" dagger in a sheath made from alder wood decorated with bronze rivets and lined with a woolen fabric.

H. Piesker has investigated some richly furnished burials in the center of the LÜNEBURGER HEIDE. Digging had begun in 1935, and soon nearly 300 barrows were found in that region. In the following years 63 barrows were examined, of which a third proved to have been robbed. The overwhelming majority of all barrows belonged to the Montelius II, were built of sod, and contained oak tree-coffins.

The richest graves were found near the village of WARDBÖHMEN. One of the barrows was 20×10 m. and contained five burials.

One corpse, in a tree-coffin, wore a bronze head dress in the form of conical *tutuli* probably originally sewn onto a cap which had disintegrated. Bronze spirals of various sizes were found on both sides of the head; they were undoubtedly hair ornaments. The corpse wore a bronze collar ribbed lengthwise and ornamented with concentric circles; over it there was a plain bronze ring and a chain made of small bronze spirals. A richly ornamented plaque hung on the chain, of a type found represented by six examples in another grave nearby. This was fixed on the chest by means of a large pin with a bead also in the form of a plaque. The woman wore bronze spirals on both arms and a plain bronze ring on a finger of the left hand. Similar bronze bracelets en-

[16] K. Schlabow, *Germanische Tuchmacher der Bronzezeit* (Neumünster, 1937); W. von Stokar, *Spinnen und Weben bei den Germanen, Mannus-Bibliothek*, 59 (Leipzig, 1938).

circled both calves, and bronze loops ending in spiral plaques were on the ankles; from one of these a small ring hung down to the foot (fig. 1).

There is no doubt that these dead were interred in their festive garments. Noteworthy, is also another female burial. This woman who was not in a coffin, wore a particularly rich head dress. It consisted of conical *tutuli*, small pipes, and spirals in bronze; these were connected with each other by means of a long chain, which consisted of bronze links and hung down the back of the wearer. Bronze spirals of various sizes were used as ear rings and a bronze ring, its ends turned into spiral plaques, encircled the neck (fig. 2).

FIG. 2. WOMAN OF THE EARLY BRONZE AGE. AFTER L. ZOTZ.

The observation in situ of the rich leg ornaments clarifies the problem of the dress worn by the nordic women of the second millennium B.C. Since the "Mädchen von Egtved" was found in 1923 the question has been debated whether the women of the Bronze Age wore woolen clothes down to the ankles or knee-free skirts. The girl of Egtved in Denmark was 18 to 25 years old; she wore the usual jacket and a short skirt made of cord fringes. The new finds show that women were buried sometimes with richly decorated head dress and sometimes with richly adorned legs. It seems probable that the splendid caps belonged with long dresses and the leg ornaments with short ones; and that the former were worn by married, the latter by unmarried women.

Two of the five burials in the long barrow mentioned above contained coffins with corpses of men. Here too, the magnificence of the body ornaments is striking. In one of these, gold spirals were found above the shoulders and are taken to be hair ornaments. Nine gold ring-spirals were found in the graves in Wardböhmen, worn by men, women and children. They were worn in some cases on fingers. One man wore on his chest a large "Lüneburger Fibel." This is a developed form of the brooch where the ring is flattened and ornamented, ending in spirals.

The burials of northwestern Germany reveal a high development of bronze culture. Piesker speaks of an independent Lüneburg Bronze culture, but Sprockhoff would rather see a "Kulturprovinz der Ilmenau."

The Lausitz Area

Among the pottery discovered in the eastern and central German region of the Lausitz culture may be mentioned a cup with a handle, belonging to the Late Bronze Age, found in a grave field in SCHEBITZ (Kr. Trebnitz) near Breslau (pl. XXIX, c). It is glazed with graphite, ornamented with groups of furrows and a sculptured ram's head opposite the handle. The forehead of the animal is pierced in two places, its muzzle in one; the holes connect with the hollow spout-like neck serving the same purpose as the spout of a watering can. In view of the significance of the ram's head in many prehistoric cultures it is to be assumed that the cup was used for cult purposes.

A gold treasure has been found in KAROLINENHOF (Kr. Landsberg a. d. Warthe), and is described by Frau Gahrau-Rothert. A cylindrical earthen vessel with a fitted lid, typical of the Late Bronze Age, contained six finger spirals and one arm spiral in pure gold. All are so-called "Noppen" rings, which first appear in the Aunjetitzer culture of the Early Bronze Age. According to Kossinna "Noppen rings are cylindrical spiral rings, not always wound in the same direction but showing several reverse bends so that they have a wide front and a narrow, often quite open back."

Similar rings are known from Saxony, the Lausitz, and Silesia, as well as from the tumulus

culture of southern Germany; such are the "Noppen" spirals from the gold treasure of Trassem, Kr. Saarburg. Similar spirals in the shape of the figure 8 found in Bohemia have been labeled "Koniggrätzer-Achter."

The urn fields of the Lausitz culture are most numerous during the Early Iron Age, or the Hallstatt Period. One of the largest fields of that time has been investigated by G. Raschke in KATSCHER (Kr. Leobschütz) in Upper Silesia; 472 urn graves were found, some furnished with 30 to 40 vessels, and their method of construction determined.

A boxlike wood structure was erected in a roomy grave, the outer side supported by poles or rocks. The urn and the funerary offerings were set inside and covered with sand. The structure was then set on fire, and subsequently covered by a flat mound.

The burial rites, then, as revealed both in Katscher and in Lampersdorf, consisted of a double burning. Houses of the dead of the Early Bronze Age, when corpses were not burned, are known in the northern[17] as well as in the Lausitz culture areas.[18] At that time the carefully constructed houses were burned with the unburned corpse inside. Similar houses of the dead from the Hallstatt Period of southern Germany have been found in recent years.[19]

A special group of the Upper Silesian Hallstatt Period, distinguished by graves with skeletons, is known as the Adamowitz group. Several such graves were found among 80 burnt graves investigated by F. Hufnagel in Waldenau (Kr. Gleiwitz). They are contemporaneous with the urn graves and the "bone mounds," and use the same cemetery. This shows again that different burial rites were used by different tribes at the same time.

The rectangular Upper Silesian skeleton graves were usually covered with or delimited by rocks. Sometimes they were equipped with a wooden floor. The furniture, usually consisting of several vessels, was the same as that in the burnt graves. A deer antler's axe and bone arrows were found next to one male skeleton who wore a bronze collar and an iron arm ring (pl. XXIX, A). Usually, however, a few hair ornaments were the only metal objects found.

The furniture of the female graves was richer: bronze and iron rings for arms and feet, hair rings, pins, and a forehead ornament consisting of a leather band with decorative bronze buttons. This simple head dress seemed to be very popular in eastern Germany during the Hallstatt Period, as seen from the beautiful gold head dress found several decades ago in Mönchswalde near Jauer in Lower Silesia.

The Western Area

W. Rest investigated thirty barrows near BELL (Kr. Simmern) in the Rheinland. A large mound, 22 m. in diameter, was surrounded by other, smaller mounds. The main grave turned out to be a chariot grave. A four-wheeled chariot with iron armor stood inside a rectangular frame made of round beams. The sides of the chariot were decorated with bronze plates and buttons. The wheels were placed in special grooves. The corpse was stretched out on the chariot, a bronze buckle, a situla, and an iron lancepoint next to it. The burial is very similar to the burials of the Hallstatt Period which have long been known from Alsace and Bohemia.

Other chariot graves in the Rheinland were identified by von Uslar. Fifty barrows of the Hunsrück-Eifel culture, in part surrounded by wooden poles or round pits, were investigated in BASSENHEIM, Kr. Koblenz. The dead were buried in tree or wooden coffins, or simply on boards. One chariot burial like that in Bell was also found but unfortunately it had been robbed in ancient times. Two graves with two-wheel chariots were found in the well-known grave field in KÄRLICH, Kr. Koblenz.

A particularly rare ornament of the Hunsrück-Eifel culture comes from a grave field in ANDERNACH on the Rhein. It is a so-called "Totenkrone"—a hollow bronze ring with numerous interwoven small rings set around it (pl. XXIX, B).

Interesting data of particular significance for the study of symbolism came from a barrow near BAIERSDORF not far from Erlangen. Although dug many years ago this find has not as yet been described scientifically; and the stone slabs with

[17] G. Schwantes, *Vorgeschichte von Schleswig-Holstein* (Neumünster, 1939).

[18] L. Zotz, *Prähist. Zeitschr.*, XXVII (1936), pp. 196 ff.

[19] *Nachrichtenblatt f. deut. Vorzeit*, XVI (1940), p. 7; *Bayr. Vorgeschichtsblätter*, XVI (1942), p. 84.

the significant signs were kept until recently in the institute directed by the author.

A barrow, 14 m. in diameter and 1.5 m. high, was dug out in the woods along the left shore of the Rednitz between Erlangen and Forchheim, west of Baiersdorf. A cremation burial of the

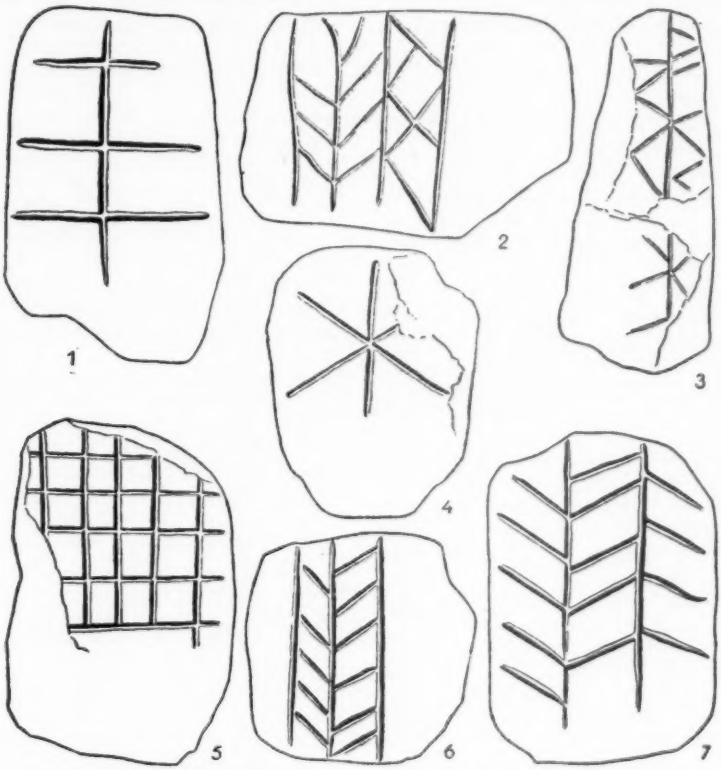

FIG. 3. ROCK-CUT DESIGNS FROM BAIERSDORF AND SIGRITZAU. AFTER L. ZOTZ.

Hallstatt Period was found, enclosed in a large urn decorated with notches and triangle patterns. A smaller vase stood near it. A bowl with handles apparently served as a lid for the urn. The furniture consisted of two pairs of arm rings with open ends, a third pair of bronze rings pierced at the ends for fastening with small bronze rings. These rings are carefully decorated with groups of lines. Another ring made of a thicker bronze wire is similar to the first pair, and an eighth ring is of the so-called stirrup form. A pair of identical pins of the poppy-head type were also present. The head of a characteristic 'bomb' pin was made of wood; it was partly preserved, but completely charred. Gold, mother-of-pearl, corals, jet, and bone served as raw materials for similar pins found in Bavaria; these are usually decorated with holes.

The grave contained eight bronze brooches. Four of these, almost completely preserved, belong to the bow and drum types; the other four are broken up beyond recognition. The brooches and the rings belong in pairs and were connected by small chains, some of the links of which are preserved. Badly decomposed iron fragments belonged to one or two knives.

The metal objects, taken as a whole, present no problem for dating. P. Reinecke, several decades ago, classified all the bronze and iron objects from the barrow near Baiersdorf as belonging to Hallstatt D. The significance of this find lies, however, in the stone circle which surrounded the barrow.

This stone ring was 9 m. in diameter and consisted of about seventy thick, heavy, sandstone slabs taken from the local red marl. They are from 20×40 to 50×70 cm., and average 15–20 cm. thick. The area of the circle within this ring was in part paved with similar slabs. The burning of the corpse probably took place in this area, judging by the ashes and charcoal remains, and the traces of fire on the floor of the barrow.

There are altogether 55 stone slabs, all of them decorated on one side with engraved symbols and signs (figs. 3 and 4). In form and content, as well as in art, size and arrangement, these stones belong to the same cultural phenomenon as the stone rings found earlier in the same region, near the village of Sigritzau (Amt. Forchheim), often referred to as the Kersbach find. Therefore they will be considered together.

There can be no question that the engraved signs are mere ornamentations. They may be classified into various groups:

1. Most frequent are the fir-tree or herringbone patterns. They occur singly, with or without a frame, or in two or more rows together. The "herringbones" are arranged in such a way as to produce a zig-zag pattern.

2. The ladder pattern differs from the fir-tree pattern only slightly: the rungs form a right angle with the axis, instead of an acute angle.

FIG. 4. ROCK-CUT DESIGNS FROM BAIERSDORF AND SIGRITZAU. AFTER L. ZOTZ.

The "ladders" occur singly, with or without a frame, and sometimes in combination with the fir-tree patterns.

3. X-shaped signs are less frequent; they occur singly, without a frame, or several X's are placed in a row and framed and combined with fir-tree patterns among or with zig-zag patterns.

4. The wolf-tooth and zig-zag patterns are closely related to the X signs; if a vertical line is drawn through the middle of a horizontal X and if several such X's are drawn one on top of another, a wolf-tooth or a diamond pattern will result; if the vertical axis is left out, the zig-zag pattern results. A row of horizontal X's occurs among the Baiersdorf stones combined with the fir-tree motif.

5. A checkerboard pattern occurs six times among the Baiersdorf stones.

6. Simple or concentric circles occur rarely.

7. All other signs are rare. Some suggest letters, and there is one obscure diamond-vulva symbol.

A thorough study of these signs would occupy too much space here. I hope to return to the problem later. In brief, it may be noted that fir-tree patterns are common as fertility symbols, while the checkerboard stands for the earth. The X signs are apparently solar, and so also is the circle.

The finds in the region between Bamberg and Erlangen, in Baiersdorf and in Kersbach-Sigritzau, reveal a self-contained culture community of the Hallstatt Period. This local Hallstatt group is distinguished by the custom of expressing the cult of the dead through symbols engraved in stone. Here, as well as in the northern cliff pictures, the symbols represent not the deeds of the dead but "a resurrection magic, legitimization and help for the beyond."

The close connection between the cult of the dead and that of fertility must be emphasized for our Oberfrankish culture community of the Hallstatt Period. A barrow discovered in KOSBACH, near Erlangen,[20] in 1913 contained not only a stone ring inside the mound but also a square stone pavement at the edge of the mound, known as the "Kosbacher Altar." In its center stood a stele 0.63 m. high in the form of a phallus with a clearly distinguishable glans. There, too, fertility rites were closely connected with the cult of the dead.

[20] R. Herold, "Beiträge zur Vorgeschichte Erlangens und seiner Umgebung," *Sitzungsberichte der physikal.-medizin. Gesellschaft in Erlangen*, xlv (1913), pp. 55 ff.

A Bog Find

Bodies found in swamps are not rare in northern Germany and Denmark, but are usually difficult to date. This is particularly deplorable because they are almost the only finds which preserve organic materials, such as shoes, clothing, etc. Such a body was found near Dröbnitz (Kr. Osterode), in East Prussia. It is that of a girl, 12 to 14 years old, wrapped in a sheepskin cape. The shape of a wooden comb attached to the cape dates the find to the Early Iron Age. This dating is corroborated by pollen analysis.

According to La Baume the cape was made of four skins, carefully sewn together. It is edged at the neck and is equipped with an eye and thong for closure. Numerous old rips are mended with leather patches and a long rip through the whole length of the cape is sewn up with gut. Thus it was a poor child who lost her life in the swamp 2500 years ago as a result of an accident or violence.

The legs were unfortunately torn out, or destroyed, during the digging. Otherwise the preservation of the corpse was excellent; not only the body tissues but even the inner organs were distinguishable. The study of the digestive tract revealed that the girl's last meal consisted of vegetables, wheat-flour mush, peas, and meat.

E. La Tène Period

The Middle La Tène Period finds Celts in western and southern Germany, and Germans in the north and east, but the racial features of the Early La Tène are uncertain. To this period belongs a house of the dead found by K. Ullmann within a barrow in near HEROLDSBERG, not far from Nürnberg. This was a rectangular building of stone, 8×10 m., and is evidence for the contemporary dwellings. An inhumation burial was accompanied by pottery, an iron cleaver, and an Early La Tène animal-head fibula.

A western Germanic cemetery discovered through military operations at DÖBERITZ in the vicinity of Berlin was investigated by Liebetraut Gahrau-Rothert. The graves, only 25 to 30 cm. below the surface, consisted of situlae and bowls ("Schalenurnen") similar to the east-Hannover

type. There are connections also with the Langobardic area of the lower Elbe[21] and the Hermunduric in central Germany from Seedorf. A few vessels seem to be patterned after the Celtic wheel-made ware, while others show connections with the Vandals of Vendsyssel in Denmark.[22]

The metal objects date the field as of the second half of the last century B.C. The iron brooches were of the Middle La Tène type or "Langobard" type. Decorative pieces consisted of belt hooks and chains worn between brooches like those from Stradonitz in Bohemia. Bone pins resembled those of the early Roman Empire. Some of the sherds show decorations otherwise usually attributed to the first century of the Christian era. No weapons were found and this was probably a cemetery for women.

A Celtic settlement of salt workers was found in the center of the old Württemberg salt city of SCHWÄBISCH-HALL. E. Kost has shown that the settlement was situated at the very edge of the salt springs which later became filled up. A great many objects used in the working of the salt were found. Tree troughs, up to 5 meters in length, were found among other technical devices. The settlement seems to have been a real "industrial city" for iron smelting was practiced in it too, as evidenced by the presence of several furnaces, blast-pipes, bellows, and slag.

Numerous fishing implements are worth special mention. Schwäbisch-Hall is situated on the Kocher river. Glass bracelets and other ornaments evidence the lively cultural relations of the wealthy Celtic merchants with Bohemia, Switzerland, and Gaul. Polychrome vessels, as well as other objects, show that the settlement existed throughout the La Tène Period and down to the Roman Empire.

Chemical analysis of the content of some vessels disclosed boiled beans, meat, and bread, and a variety of porridges cooked with milk and fat.

F. PREHISTORIC FORTRESSES[23]

The famous Neolithic (Michelsberg culture) fortification of Urmitz on the Rhine,[24] near Koblenz, has been destroyed, but one of the remarkable gates has been carefully excavated. Foundations of small pole houses were discovered, a find particularly important in view of the theory of O. Paret, that Urmitz and other such fortifications were cattle corrals. It is no longer necessary to think of this as evidence of a sudden climatic change.[25]

A fortification on the HUTBERG, near Wallendorf (Kr. Merseburg), also belongs to the Michelsberg culture. It consists of a ditch, 2–4 m. in depth, with an earthen wall and palisade. A gate, 2 meters wide, is clearly distinguishable.

Numerous storage and refuse pits as well as many pole holes were found. A rectangular house plan, with a double row of poles and a hearth in the back part, was identified. The pits contained animal bones, stone and bone implements, and typical pottery. Many of the vessels were preserved completely—evidence of the fact that this fortified settlement was abandoned suddenly and in flight. This may have been connected with the intrusion of the 'cord-pottery' people, for their burials with typical pottery and faceted battle-axes were found on the Hutberg.

Two of the rare burials of the Michelsberg people were also found by F. Benesch at the bottom of a hearth pit. It is believed that after the decomposition of the body, the remains were buried in the house.[26] No funeral furniture was found.

Another Neolithic settlement, near ALTHEIM in Bavaria, has been known since 1914. A recent excavation suggests that there were two levels of habitation.

G. Raschke has discovered the first known fortified mountain settlement of the Aunjetitzer culture, surrounded by a moat, in Altstett (Kr. Leobschütz), in Upper Silesia. Pottery and a pierced bronze needle date it definitely.

W. Unverzagt of Berlin investigated a number of large Lausitz fortresses in eastern Germany.[27] Ancient remains were exposed by flood waters in the steep bank of the Oder, near the small Brandenburg town of Lebus. The separate struc-

[21] W. Wegewitz, *Die langobardische Kultur im Gau Moswidi* (1937).

[22] M. Jahn, "Die Wandalen," in Reinerth, *Handbuch der deutschen Stämme*, iii (Leipzig, 1940).

[23] C. Schuchhardt, *Die Burg im Wandel der Zeit*.

[24] *Bonner Jahrbücher*, civ (1899), pl. 1.

[25] O. Paret, *Das neue Bild der Vorgeschichte* (Stuttgart, 1946), pp. 89 ff.

[26] Cf. Wilke, *Heilkunde*, pp. 376 ff.

[27] Cf. his earlier excavation at Zantoch, Brackmann and Unverzagt, *Zantoch, Eine Burg im deutschen Osten* (Leipzig, 1931).

tures and fortifications, lying one over the other, could be seen in an eight-meter thick layer.

A small bronze-treasure, containing among other objects an east-German urn-head pin, dates the earliest of the settlements in the end of the Bronze Age. Pottery sherds confirm this dating, although the majority of them belong to the somewhat later Lausitz pottery of the Aurith and Göritz style. There were no later sherds; the Lebus fortress came to an end during the last part of the Early Iron Age. Later, at the time of the Roman Empire, the east-Germanic Burgundians buried their dead in the spot where the old Lausitz fortifications had once existed. The graves, in turn were damaged by the early Mediaeval settlers.

An older Lausitz fortification was clearly distinguishable from the more recent one at the edge of the hill. The older moat was marked by two rows of post holes. There probably had been a palisade or, more probably, a wall of wood and earth with steep sides. The later wall contained remains of wooden revetments.[28]

G. Roman and Frankish Periods[29]

By Wilhelm Grünhagen (Erlangen)

Fortifications

Investigation of the Zugmantel fortifications resulted in the discovery of the ditch and wall of the first and second stone forts.[30] The earliest earthern fort was enlarged probably around A.D. 121; the transition to the first stone fort took place between 130 and 145; the construction of the second stone fort was begun probably under Caracalla, and ended under Alexander Severus.

A late Roman fort was found in 1938 on the Münsterberg in Breisach (Kr. Freiburg i. Br.).[31] Foundations of a wall, a gate, and two fortification ditches north of the wall were identified. The wall is estimated to have been over two hundred meters long; its foundations are 3.30 m. wide. It is made of unhewn stones, mostly of volcanic origin, some sandstone and some old material, such as broken bricks and pieces of rock with old mortar. Clay loess served as binding material in the lower layers, chalk-containing mortar in the upper ones. A rectangular tower adjoining the wall was identified. The gate foundation was typical for gates of late Roman forts. A pile of rubble within the fortification contained late Roman sherds and a bone comb. A number of round, sharpened stakes were found under the foundations, driven into the loess; some were in rows. Their significance is still disputed. H. Dragendorff and R. Nierhaus believe the posts were meant to hinder the enemy from undermining the wall.[32]

The fort is one of a series constructed along the Rhine under Valentinian I, about 369, against the Alamanni.[33] There are no traces of destruction through fire. The fort was probably vacated at the end of the fourth century or during the first years of the fifth century.

The digging of the Porta Nigra in Trier was essentially finished just before the war.[34] The search for the inner end of the ditch near the east tower was not successful, but the western gate was thoroughly investigated. Results of study of the pottery found in various layers are not known to the writer, but it seems established that Trier acquired its city walls when it became the capital of Gaul after the capture of Lyons by Septimius, i.e. at the end of the second century, and not in the late Roman Period.

Farms and Villas

Remains of a farmhouse in the district of Dürreich near Irsch (Kr. Saarburg, Landkreis Trier), have been studied; it is a trapezoidal building with a portico and wings.[35] Traces of an older, almost square structure were found below it, dating from the second century of our era. Single finds included the iron frame of a folding

[28] This report was much shortened by the Editor under conditions which made it impossible to consult Professor Zotz before going to press. He has, however, revised the manuscript as it is printed.

[29] This report was much shortened by the Editor under conditions which made it impossible to consult Professor Grünhagen before going to press. He has, however, revised the manuscript as it is printed.

[30] Cf. *Germania*, xxvi (1942), pp. 135 ff.

[31] Cf. *10. Ber. Röm.-Germ. Komm.*, 1917, p. 127; *Germania*, xiii (1929), p. 181, n. 11; *ibid.*, xxiv (1940), pp. 37 ff.

[32] *Germania*, xxiv (1940), *loc. cit.*

[33] *Cod. Theodos.*, vi, 35, 8.

[34] *Trierer Zeitschrift*, 1940, pp. 62 f.

[35] *Nachrichtenblatt f. deut. Vorzeit*, xv (1939), p. 259; *Trierer Zeitschrift*, 1939, p. 248; cf. H. Koethe, "Die Bäder römischer Villen im Trierer Bezirk," *30. Ber. Röm.-Germ. Komm.*, 1940, pp. 43 ff.

chair and a large key (22 cm. long) with a bronze handle. A small structure, probably a temple, and a cemetery with about 25 cremation burials were found outside the farm wall. Occupation continued down to the end of the fourth century.

A second farm was investigated west of LAUFENBURG in Baden. Four periods of construction were clearly distinguished.[36] As evidenced by stamps of the 21st Legion, the farmhouse was first built about the middle of the first century of our era. It was enlarged soon after A.D. 70, was rebuilt after a fire, and finally enlarged by the addition of a portico and wings. The farm was abandoned in the middle of the third century. Local pottery occurs in the earliest levels, but the building construction is Roman. A mosaic is similar to that of a villa in the Swiss Aargau. An inscription-mosaic in another part of the house seems to be a dedication of the last occupant to his predecessor in the farm, or to the family of the actual owner. A well preserved wall (about 32 square meters) shows a provincial simplification of the third Pompeian style. Single finds include a small female head in green sandstone.

A luxurious Roman villa was found near WITTLICH (Landkreis Trier) in 1904–05. Further study, made in 1940, supplemented and corrected Eberz' findings.[37] Single finds included iron farm implements, bronze pieces, a few coins, and pottery. The latter corroborate the dating of the villa as built in the second century of our era and occupied to the middle of the fourth century.

A large Roman palace in Cologne was discovered in the summer of 1941 on the south side of the cathedral.[38] The palace measured 80 by 100 meters—its length running parallel to the cathedral. The western part contained living quarters with mosaic floors, the eastern part a peristyle. The palace was first built in the second century, was rebuilt and enlarged in the third century, and destroyed by fire in the fourth century. It is assumed to have been the seat of the Roman Governor of Lower Germany. The floor of the large hall which occupied the middle of the palace was covered by a mosaic (7×10.70 m.). It is excellent work, excellently preserved and represents scenes from the Dionysos myth.[39] The piece was executed by at least two artists who were probably imported from Italy. Comparison with similar works dates the Cologne mosaic as in the decade after A.D. 150.

All remains of the palace are now lost, for an air raid shelter was built on that spot. The Dionysos mosaic, however, has been preserved within the shelter, which now serves as the "Römisch-germanisches Museum der Stadt Köln."

A small mosaic floor was found in TRIER in 1939 under the court of the Friedrich-Wilhelm-Gymnasium. A small part (2×3.5 m.) of a large floor was uncovered, decorated with geometric patterns in black and white. Some parts were darkened by fire. The floor belongs probably to the second century.[40]

Sanctuaries

A new type of shrine from the Roman Period in the Rheinland was discovered in 1938 near HOSTEL (Nordeifel).[41] It lay in the moor, and is believed to have consisted of low socles, protected by a roof supported on wooden posts. Small altars were set on the socles. Two fragments of these with traces of inscriptions were found. Small fragments of a half-lifesize statue, coins of Vespasian, Domitian, Hadrian, and Marcus Aurelius, glass fragments and sherds of vessels from the second to the fourth centuries were also found.

Digging on the Lindenberger Ösch near KEMPTEN (Allgäu) yielded a whole temple district northwest of the antique city of Cambodunum.[42] Several temples of almost square groundplan were uncovered. Altars dedicated to Hercules and to Epona were found. The whole district was surrounded by a triple wall.

A well shaft filled with Roman stone sculptures was found near ETTLINGEN (Baden).[43] Two sandstone reliefs of Mercury were relatively well preserved. There were also parts of a life-size

[36] *Badische Fundberichte*, 1940, pp. 25 f.; *Germania*, xxiv (1940), pp. 32 ff.

[37] L. Hussong, *Die Rheinprovinz*, xvi (1940), pp. 288 ff.; *Trierer Zeitschrift*, 1941/42, pp. 229 ff.

[38] *Germania*, xxv (1941), pp. 233 ff.; *Forsch. u. Fortschr.*, April, 1948, Heft 7/8, cols. 72 ff.

[39] Gerster, *Das Dionysos-Mosaik in Köln (Rheinische Meisterwerker*, Bonn, 1948).

[40] *Trierer Zeitschrift*, 1940, p. 66, pl. 16.

[41] *Bonner Jahrbücher*, cxlv (1940), pp. 343 ff.

[42] *Nachrichtenblatt f. deut. Vorzeit*, 1940, pp. 10 f.

[43] *Badische Fundberichte*, 1940, pp. 26 f.; *Germania*, xxv (1941), pp. 111 ff.

statue of Mercury made of multicolored sandstone, a left hand of a woman wearing two rings, the upper part of a cornucopia, an excellently preserved altar with an inscription and a fragment of another altar. The inscription discloses that the decurion L. Cornelius Augurinus has dedicated this shrine to Mercury and to Maia in accordance with a vow. The dating of the dedication is not certain; J. Alfs places it after the time of the Antonines and before 213.[44]

The well shaft contained also several fragments of four-sided pillars which must have been parts of a balustrade. The floor of the well was covered with sigillate sherds and fragments of earthen jugs with single handles. The absence of post-Roman finds shows that the well was not used after the time of the Roman occupation. The sculptures must have been thrown into the well around 260 at the latest.

A sacred spring, banked with blocks of sandstone and surrounded by quartzite foundations of an almost square temple, was found not far from some Roman ruins near HOCHSCHEIDT (Kr. Bernkastel).[45] The outer dimensions of the temple were 14×13.5 m. It is believed that the inner wall consisted of wooden pillars set over a stone socle. Fragments of the roof and of the wooden floor were also found. The inscription on the altar, found directly at the entrance to the shrine, reads: *DEO APOLLINI ET SANCTE SIRONE R.C. PRO. CON.* . . . A very well preserved high relief of a draped female deity was found inside the cella. A snake was wound around her right arm; a bowl with three eggs—food for the snake—was in her left hand. This goddess corresponds to the Greek Hygieia. A statue of Apollo, smaller than life-size and found near the entrance inside the cella, represents the young god standing with crossed legs holding a lyre which rests on a sitting griffon. Fragments of another Apollo statue, larger than life size, were found scattered in the cella. All the sculptures were made of tholeite sandstone. Other finds included an inscription, a number of terra cottas representing female deities with animals or fruit, and coins of Trajan, Hadrian, and Antoninus Pius, dating the shrine in the second century. A similar shrine may have existed near the "sacred spring" west of Freisen (Kreis Birkenfeld, near Trier), judging by Roman sherds of the second century, found near the spring at a depth of two meters.[46]

An altar of Mars with a long dedicatory inscription dating A.D. 220 was found in the temple district in MAINZ on the spot now occupied by the cathedral and the Johanniskirche.[47]

Another new find in this district is a 'Matron' group. The heads of the three sitting figures have been broken off. The middle Matron has an animal in her lap; the other two have baskets with fruit. This is the first plastic representation of the Matrons found in Mainz. The monument may have stood in the temple of Jupiter.[48]

In the fall of 1938 a limestone relief of two goddesses of fertility was found above the amphitheatre in TRIER. The heads were missing in this sculpture also; both figures have fruit in their laps. The sculpture is of fairly good workmanship and stems from the third quarter of the first century of our era.[49]

An important find in the court of the Bürgerhospital in COLOGNE was a limestone altar of Jupiter.[50] The inscription consists of only the letters *IOM*; above these are three small busts, and on the other faces a fruit, and a male and female attendant in relief.

Digging in a heap of rubble in the woods between LUDWEILER and LAUTERBACH (Kreis Saarbrücken) yielded five dedicatory reliefs made of reddish yellow sandstone with representations of Epona, an equestrian deity represented riding and with a driving stick, or a cornucopiae.[51]

Tombs

Numerous fragments of intentionally destroyed large Roman monuments of yellowish sandstone were found in 1939 in the Saarstrasse in MAINZ.[52] One of the less fragmentary groups represents Ganymede wearing a Phrygian cap,

[44] *Germania*, xxv (1941), p. 114.

[45] *Trier Zeitschrift*, 1940, p. 71; *Germania*, xxv (1941), pp. 104 ff.

[46] *Trierer Zeitschrift*, 1940, p. 70.

[47] *Mainzer Zeitschrift*, xxxiv (1939), pp. 105 f.

[48] Cf. *CIL* 6729.

[49] *Germania*, xxiii (1939), p. 123. For these goddesses cf. *RE* xvi, 1, cols. 976 f., s.v. "Muttergottheiten."

[50] *Nachrichtenblatt f. deut. Vorzeit*, xvii (1941), p. 143.

[51] *Germania*, xxv (1941), p. 198; *ibid.*, xxvi (1942), pp. 132 ff.

[52] *Mainzer Zeitschrift*, xxxv (1940), pp. 63 f.

boots and coat; an eagle hovers over him, ready to carry him off. It was probably a tomb acroterium. Remains of capitals and pilasters, a fragment of a large inscription and other architectural remains were identified. A large stone sarcophagus was found in a deeper layer. Detailed study of the finds continues.

The foundations of the "Igeler Säule" were exposed in 1940, and earlier observations confirmed and expanded.[53]

Two tomb monuments of altar type were found in situ at the western end of the village of IGEL. Both faced south, like the Igeler Säule. One was decorated with funerary reliefs, urns, acanthus, a bird with grapes. The back was unfinished, showing that the carving was done in place. Its style suggests the first half of the third century.

Other tomb remains were found near OBERMENNIG (Landkreis Trier), including a sculptured block with a dancer before a candelabrum and a wreathed male head.[54]

A tomb stele made of fine limestone, 2.30 m. high, was found in COLOGNE in 1939; it had probably been brought to the city from the cemetery of the Roman naval base on the Alteburg. The upper part of the stele bears an inscription, the lower a representation of two gladiators in fighting position. A sphinx between two lions, each lion holding a ram's skull, are sculptured in high relief on top of the stele. The monument belongs to the Flavian period.[55]

A rectangular limestone block was found together with the stele. It is decorated in relief on three sides, Medusa head, acanthus, two Tritons.

Finds from Tombs of the Roman Period

The contents of a woman's tomb of Tiberius' time, found in the city of KREUZNACH, included numerous vessels (mostly "Belgian ware"), a small, slender glass balsam flask, a round silver-plated bronze mirror, bronze kitchenware and seven fibulae, six of them belonging to three pairs, of the Augustan-Tiberian period. Two simple animal terracottas—representing an ox and a deer—were remarkable in that the heads were made separately, as insets.[56]

A spherical flask made of clear crystal glass from a Cologne foundry came from a Roman cremation burial, dated shortly before A.D. 200, near KISSELBACH. The flask contained remains of a fatty, viscous dark green mass, an effective if rough cosmetic of styrax, wax, and almond oil with an admixture of aromatic oils of cinnamon bark, calamus, and bitter almonds.[57]

A cemetery in HELENDORF, (Kr. Grafschaft Hoya, Hannover)[58] of the third century yielded, among other objects, two brass pails of Hemmoor type;[59] a bronze pail with cylindric neck, a projecting notched shoulder, flat bottom and three small hemispherical legs;[60] a flat, steep-walled bronze basin, its thick rim bent outward;[61] a gold ring with a beaded setting and a lapis lazuli inset. An upright female figure was cut into the stone.

The Helzendorf cemetery belongs to a group of cemeteries of the lower Weser which contained numerous imported Roman ware together with native objects.[62]

Other Finds of the Roman Period

Remains of a Roman bridge across the Rhine were found between KOBLENZ and the Ehrenbreitstein, near the present bridge; they consisted of four rows of oak posts and some cross pieces.[63]

Numerous Roman bronze vessels were recovered from the Rhine about 5 kilometers below Speyer, near ANGELHOF. They include a tall, conical bronze pail of the type which arose at the end of the second or the beginning of the third

[53] *Trierer Zeitschrift*, 1941/42, pp. 227 ff.

[54] *Nachrichtenblatt f. deut. Vorzeit*, xvii (1941), p. 137.

[55] *Ibid.*, p. 147; *Germania*, xxv (1941), pp. 98 ff.

[56] *Germania*, xxiii (1939), pp. 238 ff.; *Bonner Jahrbücher*, cxlv (1940), p. 313.

[57] *Bonner Jahrbücher*, cxlvi (1941), pp. 340 ff.; *Germania*, xxvi (1942), pp. 211 ff.; *ibid.*, xxvii (1943), pp. 97 f.

[58] *Germania*, xxiii (1939), pp. 168 ff.

[59] Cf. J. Werner, *Bonner Jahrbücher*, cxl/cxli (1936), pp. 395 ff.; Gunnar Ekholm, *ibid.*, cxliii/iv (1938/39), pp. 311 ff.; *ibid.*, cxlv (1940), pp. 151 ff.

[60] G. Ekholm, *ActaA*, vi (1935), pp. 56 ff.

[61] Cf. Grempler, *Der Fund von Sackrau* (1887), pl. 4, 1–2; *Der II. and III. Fund von Sackrau* (1888), pl. 5, 7.

[62] Cf. for Barnstorf, *Jahrbuch des Provinzialmuseums Hannover*, 1910/11 (1912), pp. 33 ff.; for Veltheim, Chr. Albrecht, *Frühgeschichtliche Funde aus Westphalen* (1936), pp. 40 ff.

[63] *Nachrichtenblatt f. deut. Vorzeit*, xv (1939), p. 252; *Bonner Jahrbücher*, cxlv (1940), pp. 71 ff.

century.[64] An interesting inscription on a bronze kettle found at the same time reads: DEO MERCURIO VASSI(or E)TUS V S L M. The name "Vassetus" is Celtic.[65]

A bronze bust of Silenus, 14 cm. high, was found among fragments of large guilded bronze sculptures in the Altbachtal near Trier.[66] It had served apparently as a table leg; the piece is among the best and most original ones of its kind found in the Trier region.

Some pits and foundation ditches on Petrisberg near TRIER contained a few Late La Tène sherds, an imitation of a denarius of C. Julius Caesar (45–44 B.C.) and the earliest Roman Pottery yet found on German soil. This pottery can be dated tentatively as between 15 B.C. and A.D. 12.[67]

A new pottery fragment from the fort of BÖCKINGEN on the Neckar makes it possible to recognize the late work of the potter Arcanus, for it must have come to Böckingen with the 22nd Legion about A.D. 120. Connections may be established with the work of Donnaucus and with the sigillata master of Falkenberg.[68]

An antique astringent drug was found in Cologne in 1941 in the surviving half of a dark green jar or *collyrion*. It was defined as Potassium-calcium-aluminum sulphate and arnica pollen. An inscription includes the name of the occulist C. Cassius Doryphoros. The receipt is thought effective for inflamation of the eye lids.[69]

The Frankish cemetery in RÜBENACH yielded a stamp of an occulist made of greenish soapstone, giving the name of the physician as well as several prescriptions against eye ailments.[70]

A new acquisition of the Museum in Cologne is a spherical glass flask richly decorated with painted pictures (sacrifice, harvest, banquet), now rather faded. It is Cologne work of the latter part of the third century.[71]

Another new museum acquisition is a fragment of a phalera made of transparent blue glass. The subject of the portrait cannot be recognized, but may be Nero, Drusus, or Caligula.[72]

A small Late Roman treasure found in 1936 near Gross-Bodungen (Südharz) and studied by the author consisted of 21 gold coins from Magnentius to Constantine III, of numerous fragments of silver vessels and silver ornament. The silver fragments come from two large decorated silver vessels, one made in the second half of the fourth century, probably in Gaul, the other probably in Trier.[73]

Finds from the Frankish Tombs

Digging under the Severinskirche in COLOGNE disclosed the ground plan of a Roman structure (9×13 m.) with an apse on one side. The simple church belongs probably to the time of Constantine. The lower layer of the site was filled with Roman coffins of wood, stone, and lead; over them were Frankish burials in paved and walled tombs.[74] Two tufa coffins discussed by Fremersdorf, those of boys, contained pottery, glass bowls and flasks, remains of belts, bronze coins of Constantine II, and an iron francisca. Analysis of the food found in the coffins revealed, among other things, eggs, remains of a bird cooked in honey, and a millet gruel sweetened with honey and with much animal fat; fermented birch syrup and wine were among the beverages. The tombs belong to the first half of the fifth century.[75]

Two graves from the uncovered cemetery near ORSOY (Kreis Mörs) on the lower Rhine contained parts of horse harnesses, some of them richly decorated and made of gold-plated silver or silver-plated bronze.[76] In another tomb the coffin was placed in a chamber lined with wood. Parts of a horse harness, animal bones and eggs, a shield and other objects were placed next to the coffin

[64] *Germania*, xxiv (1940), pp. 29 ff., 126 ff.; cf. J. Werner, *ibid.*, xx (1938), pp. 258 ff.

[65] A. Holder, *Altcelt. Sprachschatz*, iii, pp. 119 ff.

[66] *Trierer Zeitschrift*, 1939, pp. 238 f.; *Germania*, xxiii (1939), p. 123.

[67] *Trierer Zeitschrift*, 1939, pp. 93 ff.

[68] *Germania*, xxiii (1939), pp. 163 ff.; cf. *Festschrift für August Oxe* (1938), pp. 45 ff.

[69] *Germania*, xxv (1941), pp. 25 f.

[70] *Ibid.*, pp. 23 f.

[71] *Ibid.*, xxvi (1942), pp. 42 ff.

[72] *Ibid.*, xxiv (1940), pp. 59 f.; for the glass phalerae in general see F. Drexel, "Antike Plastik," *Walter Amelung zum 60. Geburtstag* (1928), pp. 67 ff.

[73] *Forsch. u. Fortschr.*, July, 1948, Heft 13/14, pp. 149 ff.

[74] *Nachrichtenblatt f. deut. Vorzeit*, 1941, pp. 144 f. and 149 f.

[75] *Germania*, xxv (1941), pp. 180 ff.

[76] *Nachrichtenblatt f. deut. Vorzeit*, xv (1939), p. 253; *Bonner Jahrbücher*, cxlv (1940), p. 351.

in the chamber. A German imitation of a solidus of Anastasius I was also found; it dates the tomb to the sixth century. The skeleton held a glass tumbler in its left hand.

Of the 82 graves investigated in the Frankish cemetery near COLOGNE-JUNKERSDORF only 14 were unviolated. These contained, among other things, numerous eagle fibulae some in silver, others in bronze, silver ear-rings, a silver bracelet, and bronze basins and bowls.[77]

The following cemeteries were investigated: Rübenach, Kr. Koblenz, where 770 graves were studied; Bendorf-Mühlhofen in the Neuwieder Becken; Siersdorf, Kr. Jülich; Wollersheim, Kr. Düren; and Krefeld-Gelleb where about 1200 graves were studied between 1936 and 1942.[78]

The tomb of a Merowingian prince was found near PLANIG (Rheinhessen) in the summer of 1939.[79] It contained among other things an excellently preserved clasp helmet of iron, gilded bronze, and silver. A chainmail cuirasse lay across the chest of the corpse, a spatha on his right, the knob, cross-bar, and scabbard rim decorated with gold and almandine ornaments. A large white pearl was next to the guard. A long knife with a gold scabbard lay on his left; two smaller knives with gold-decorated handles and knobs, a silver stirrup, a spear, a shield, remains of a belt purse with gold handle and almandine insets were also found. The purse contained a small Roman balance, a pincette, a silver pierced needle, and a flint. A solidus of the East Roman Emperor Leo I (457–474) was found in the mouth of the corpse. The burial was in a wooden coffin.

The helmet of Planig, the fifth found in Germany and the twelfth in Europe, must have been made in the same workshop as the one from Stössen; the relief ornaments of both were made from the same matrix. The burial took place not later than in A.D. 500 and the tomb was probably that of an Alamannian prince.[80]

A woman's grave in WAHLHEIM (Kr. Alzey) contained a large quantity of jewelry including some rather unusual objects, such as a spherical bronze bulla, a pierced bronze plaque, an ivory ring, a pierced shell (Cypraea) and a bronze clasp fibula, the latter being particularly surprising in a Frankish tomb.[81]

An even more luxurious woman's grave dated around A.D. 500, was found in SCHWENNINGEN A.N. Numerous ornaments included objects made of pure gold, pearls, and other materials.[82]

Digging under the Severinskirche in Cologne yielded also the slab grave of a minstrel.[83] A wooden lyre and leather cuffs as well as leather shoes were found next to the skeleton. Remains of clothing show gold borders. A wooden pilgrim's flask, a leather traveling purse with thongs, and silver-gilded clasps, date the grave to the eighth century.

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A. EXCAVATIONS

Burgenland

An interesting burial was excavated by G. Pascher and R. Stiglitz, under the direction of H. Vetters, near the little village of JOIS (Bzh. Neusiedl a. See) on the western shore of the Neusiedler Lake. The burial chamber was built of large, crudely hewn sandstone blocks. The structure, approached by a winding path, is reminiscent of the Thracian burial chambers; yet it is not unlike such Mediterranean structures as the Balearic graves or the "gigantia" on Gonzo near Malta.[1] A narrow gate led from a semicircular chamber, its ceiling covered with large stone slabs supported in the center by a pillar made of crude square stones, to the tomb proper (pl.

[77] *Nachrichtenblatt f. deut. Vorzeit*, xvii (1941), pp. 150 f.; *Bonner Jahrbücher*, cxlvi (1941), pp. 417 f.

[78] Cf. *Bonner Jahrbücher*, cxlvi (1941), pp. 374 ff.; *Germania*, xxvii (1943), pp. 93 ff.; *Nachrichtenblatt f. deut. Vorzeit*, xvii (1941), pp. 124 f.

[79] *Mainzer Zeischrift*, xxxv (1940), pp. 1 ff.

[80] Cf. Lindenschmitt, *Altertümer unserer heidnischen Vorzeit*, v, pl. 12; Veeck, *Alamannen in Württemberg*, pl. 31, 5a and b; J. Werner, *Münzdatierte austrasische Grabfunde*, 66–68; Von Jenny, *Die Kunst der Germanen*, pl. 16.

[81] *Mainzer Zeitschrift*, xxxv (1940), pp. 13 ff.

[82] *Germania*, xxiii (1939), pp. 40 ff.

[83] *Nachrichtenblatt f. deut. Vorzeit*, xvii (1941), p. 144.

[1] Cf. Schuchhardt, *Alteuropa* (4th ed.), figs. 48a and 53.

XXXI, A).[2] A tumulus covered the whole structure. No mortar was used in the construction. The dating is as yet uncertain. The grave had been robbed in ancient times. The finds include Roman pottery as well as Mediaeval sherds, showing how long the grave remained accessible. The study of a settlement belonging to the later Linearkeramik also was begun in Jois under the direction of Dr. Mitscha Märheim. Bones of the horse were identified among the food refuse of the culture layer. A large settlement of the Lengyel culture was also studied in Jois; it is interesting because its stone implements (of quartzite and Flysch-Jura hornstone) are different from those of the Linearkeramik settlements.

Carinthia

ULRICHSBERG (Mons Carantanus) is the geographical center of Carinthia.[3] R. Egger found on its summit a village of the later antiquity with an early Christian church. In 1937 the *fanum* of *Isis Noreia* was found; its existence had been indicated by an inscription known for a long time: *Noreiae Isidi f(anum) A(ulus) Trebonius proc(urator)*. The war had interrupted work but two weeks of excavation under the direction of R. Egger and H. Vetters has opened up the whole structure.

This is a long building over 45 m. oriented approximately north and south (pl. XXXI, B). Its long walls approach each other, and at the north meet in an apse, 5.95 m. in diameter. In front of the apse is a square area, 2.65 m. deep, and sealed with red water cement. It must have been a water basin and probably played an important role in the cult of Isis Noreia. A series of rooms run southward from the basin becoming gradually larger in their east-west dimension. The floors of these rooms are either paved or have other stone flooring. A smaller apse was constructed later at the southern end. Its poor architectural technique dates it as late antique. The entrance was approximately in the middle of the western wall. Two wooden doors led into a reception hall which gave further ingress to the right or left. One of the chambers in the southern part was on a higher level and was equipped with a simple hypocaustal arrangement. This seems to have been the priest's living quarters. Inscriptions and single finds place this strange double-apsed temple between the first and fourth centuries of our era. The destruction occurred, as with so many pagan temples, through the victory of the Christian religion which leveled the walls and filled the water basin with rubble and junk.[4]

The division of the temple into two parts, and the two apses, suggests a double cult.[5] The name of the second god must be identified from an inscription; he has been hitherto unknown and belongs to the Celtic religion.

An extensive excavation has been conducted for many years on the MAGDALENSBERG east of Zollfeld. This point is of great importance because it was here that a bronze statue of Greek origin was found in 1502, the most beautiful specimen of its kind found north of the Alps.[6] Excavations were begun in 1948 under the supervision of Prof. C. Praschniker, director of the Institute, and R. Egger. H. Vetters was field director; H. Kenner, G. Mossler, W. Görlich and H. Dolenz took part in the work.

Systematic digging is planned for 1949; the present work was experimental. Several spots were dug up and yielded surprising results. The place had definitely been occupied since the La Tène Period. But Roman architects had built there even before the Roman occupation. Italian importations dating to the year 3 B.C. have been identified. A figurine representing a naked man sitting in a boat confirms a pre-Roman settlement and evidences a considerable artistic ability on the part of the native population. The sculpture is of religious significance and is of Celtic origin. At present a Gothic church stands on the summit of the mountain; a wall which is still 2 m. high surrounds this whole summit and traces of several rows of palisades could be identified. The settlement was not laid out as a city but consisted of groups of houses. Planning was evident only in the center of the settlement, around the

[2] A preliminary report has appeared in *Burgenländ. Heimatblätter*, X (1948), p. 101 (R. Stiglitz).

[3] Cf. the reports of R. Egger in *Carinthia I* since 1935, especially vol. 127 (for an excavation plan), and 128, pp. 18 ff. (for the *fanum*).

[4] As at St. Margarethen (R. Egger, *Anz. Ak. Wien*, lxiv, 1927, pp. 7 f.) and Wabelsdorf (H. Vetters, *Carinthia I*, 136–138, 1948, pp. 280 ff.).

[5] As in the Syrian temple on the Janiculum, cf. P. Gauckler, *Le sanctuaire Syrien du Janicule*.

[6] R. v. Schneider, *Die Erzstatue vom Helenenberg* (Vienna, 1893).

so-called 'forum.' Large buildings stood in the north, west, and east of a big, artificially leveled, open square. A temple, discovered in 1908, is on the north side; it measures over 30 m. square and is surrounded by a hall of columns built on a podium with a staircase. A big building, approximately 40 m. long occupies the west side of the square; it was probably the town hall with space for archives. A hall, 12×6 m. with apse and hypocausts, occupied the center of the structure (pl. XXX, D). Its floor was covered with mosaic which continued partly up the walls. An interesting technical detail is furnished by the discovery of a kind of iron cement: iron rods, inbedded in mortar, were used in the cover of a heating pipe. The walls of the hall of archives contained thirteen arched niches in which were kept documents (pl. XXX, C). A mosaic floor, 36 sq. m. in area, and completely preserved, decorated the room. Murals in red, green and gray colors, large parts of which are preserved, covered the walls. Another structure, on the east side of the forum, was identified tentatively as a public building. Here too, plumbing and murals give a picture of wealth and luxury. A cold-cellar was found, worked into the cliff. The cemetery with its hundreds of robbed graves was investigated and the burial rites of the rich and poor studied.

This large mountain settlement, stretching over 2 km., had existed, according to the architecture and the finds, down to A.D. 50. It was abandoned after the founding of Virunum under Claudius. Gravestones of Roman soldiers of the Cohors Prima Montanorum established that the settlement was besieged during the occupation of Noricum (15 B.C.–A.D. 45); thus it must have been of very great importance to Noricum, and hence to the besieging forces. The name of the settlement is as yet unknown. The uncovered buildings are to be preserved and will be open to the public.

Lower Austria

Excavations begun last year in RUPRECHTSHOFEN under the direction of H. Vetters were completed. The rock inscriptions were deciphered. The cave arrangements were uncovered and found to be much more recent than the rock graves.[7]

[7] A preliminary report has appeared in *Unsere Heimat*, xviii (1948), pp. 49 ff. (H. Vetters). A full report is proposed for *JOAI*, xxxviii.

The excavations of the Austrian Archaeological Institute under the direction of E. Swoboda (Graz) in the civilian city of CARNUNTUM here yielded an oblong house 23×15 m. built in two periods. A hall 10×4 m. occupies the center of the house. The rooms at the southern end had mosaic floors 4.2×4.7 m. which, according to color and workmanship belong in the first half of the second century. The central composition, badly destroyed, is of high artistic quality and represents a mythological subject. Foundations and walls are preserved to a height of one meter. The house was enlarged and rebuilt in the fourth century; a hypocaust was built at the same time, ruining the second mosaic.

H. Thaller continued the work begun last year in MAUTERN.[8] The task was to find the *burgus* and monastery mentioned in the *Vita S. Severini*.[9] A trial trench unearthed an ancient wall, and the work will be continued in 1949.

According to the *Vita S. Severini* one may expect to find in STEIN, opposite Mautern, the castle of the Rugen king Feletheus. F. Dworschak of the Krems Museum dug in the abandoned Gothic Frauenkirche, exposing the choir and the nave. He found dry walls and foundation ditches under the Mediaeval level. Pottery dates these to the third or fourth centuries. It is certain that the construction was not Roman.

O. Seewald has continued work during the summer of 1948, in a prehistoric settlement near BÖHEIMKIRCHEN. He believes the settlement to have existed from the Late Neolithic through the Middle Bronze Age. Rich pottery material, primarily the so-called 'Böheimkirchen' type,[10] as well as numerous stone and bone implements were found.

Styria

The cave of REPOLUST and those of TAUPLITZ in the Peggau region, to be opened for phosphate mining, were studied by the Bundesdenkmalamt under the direction of M. Mottl. Culture layers and hearths were found, showing relationship to the Alpine palaeolithic of Switzerland, studied

[8] H. Thaller, *JOAI*, xxxvii (1948), Beiblatt, cols. 185 ff.

[9] *Vita Sancti Severini* (ed. Noll), chap. iiii, 6–7 (p. 72): "... ad secretum habitaculum, quod Burgum appellabatur ab accolis, uno a Favianis distans miliario, saepius secedebat."

[10] R. Pittioni, *Urgeschichte* (1937), pp. 103 f.

by Bächler, and to the Yugoslavian palaeolithic studied by Brodar. These excavations are of particular interest for they are the first to be conducted on modern principles in the intra-Alpine region (figs. 1 and 2).

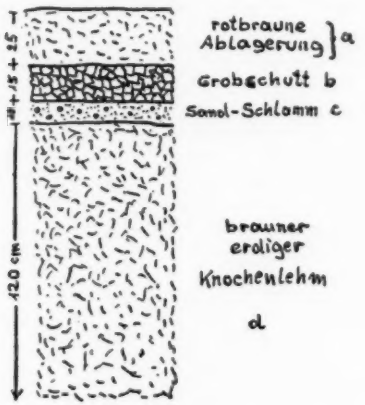

FIG. 1. LEVELS IN THE REPOLUST CAVE IN STYRIA. AFTER M. MOTTL.

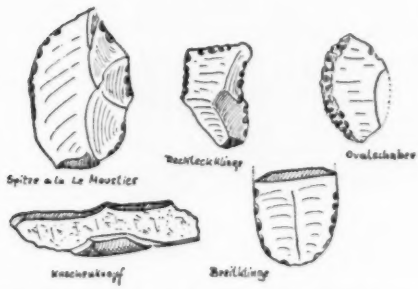

FIG. 2. FINDS OF THE AURIGNACIAN PERIOD IN THE REPOLUST CAVE IN STYRIA. AFTER M. MOTTL.

Upper Austria

During the process of reconstruction of the church of St. Martin in Linz (built in A.D. 799) a systematic investigation was made in 1947. The church was almost completely destroyed by bombs. The study of the finds has now been completed by W. Jenny and F. Stroh. Remains of a military structure of the Roman period were found under the foundations of the church. The walls were about 1 m. thick and were preserved to a height of about 0.7 m. The Roman structure was preserved only within the limits of the church.

Numerous objects date the settlement as having existed from the first to the fourth centuries of our era. The large number of Arretine sigillata is striking. Stamps of the *Leg. II Ital.*, and the well-known Ursicinus stamps, testify to repeated reconstructions. The military character of the structure is evidenced by military tiles and soldiers' cooking bowls. Four new inscriptions were added to the seven previously discovered.[11]

Tirol

Paolo Santonino (1485–87) mentions in his travel journal, as translated by R. Egger,[12] a Roman fort situated on a mountain in LAVANT, three miles from Lienz.[13] Two very old churches are on that mountain. F. Miltner, commissioned by the Institute, has made trial diggings. At least one of the churches is shown to have been built over an early Christian structure. During the period of the migrations a fort of refuge was built on the hill;[14] its outer wall could be identified in several places along the edge of the steep cliff. A gate tower and several inner rooms were also found. A third, Mediaeval, layer was found between the late antique foundations and the present-day churches.

Investigations of the choir of the Peterskirche proved the continuity of a religious tradition from prehistoric times. A square foundation below it belonged probably to a Celtic temple.

Vienna

The Museum of Prehistory and Early History, directed by A. Neumann, uses every opportunity to conduct planned digging in areas devastated during World War II.

Skeletons lying in the east-west position and

[11] Cf. *Jahrbuch des oberösterreichischen Musealvereines*, 93 (1948), p. 219.

[12] *Die Reisetagebücher des Paolo Santonino, 1485–87*, aus dem Lateinischen übertragen von R. Egger (Klagenfurt, 1947).

[13] *Ibid.*, p. 30.

[14] So also Duel; cf. R. Egger, *JOAI*, XXV (1929), Beiblatt, cols. 159 ff.

remains of pottery found in front of the Votivkirche on Rooseveltplatz disclosed that burials were made in Vindobona not only along the Limesstrasse,[15] but also along the Roman road which followed the Alsbachtal.[16] The dead were placed on a layer of broken stones and neatly covered with flat stone slabs. A ring-fibula with an omega clasp[17] dates the cemetery to the third century of our era (figs. 3 and 4).

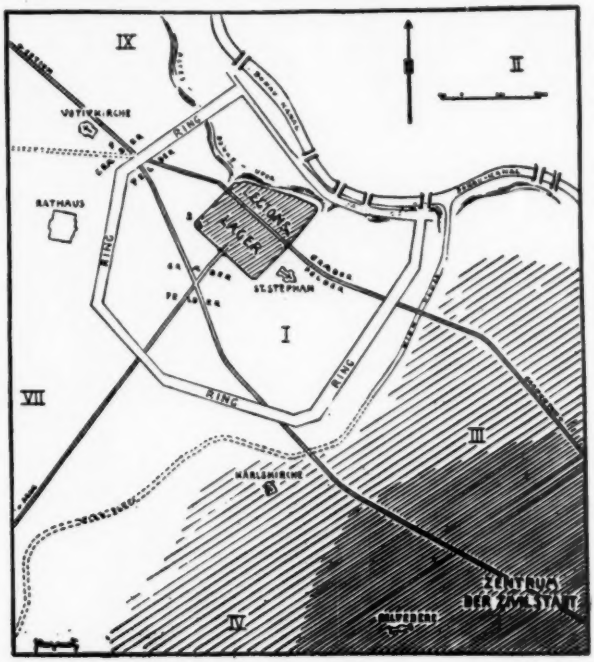

FIG. 3. VIENNA. 1) NECROPOLIS IN THE VOTIVKIRCHENPARK. 2) MEDIAEVAL CELLAR ON THE HEIDENSCHUSS. 3) CAMP WALL AND CORNER TOWER AT NAGLERGASSE 26. 4) THE HOHER MARKT.

Hoher Markt

In front of house No. 3 on the Hoher Markt (fig. 5), at a depth of 1.70 m., a poured floor of limestone and tile fragments was found. Below it were the little circular and quadratic columns of a hypocaust (pl. XXXI, c). Most of the tiles bear stamps of the Tenth Legion (A.D. 114–395) but there are some bearing stamps of the Thirteenth Legion which built the legionary camp of Vindobona around A.D. 100. A layer of ashes and a floor made of the large brick slabs of the Fourteenth Legion were found 1.70 m. below the poured floor.

Construction took place here during two periods. After the destruction in the Marcomannic War, the Tenth Legion rebuilt the camp, which was finally burned in the fourth century.

The excavated part is situated at the edge of the main street of the old camp. According to the camp plan, the street was lined with seven buildings for staff officers. The hypocausts may have been built in the house of one of the tribunes.

Further digging uncovered a large room (about 30 sq. m.) with two entrances; the *tubuli* on the

[15] Fr. Kenner, *JZK*, iii (1905), p. 195.

[16] Cf. Kenner, *loc. cit.*; E. Polaschek, *Fundberichte aus den Ostalpenländern*, iii, p. 77.

[17] Cf. J. Werner, *Germania*, xxii (1938), p. 117.

side walls were preserved in situ.

A torso of a female deity made in a native workroom according to a classical model may be mentioned among the single finds.[18]

B. Single Finds

Prehistoric

A cremation burial in stone frame of the Hallstatt Period (Stage C of Reinecke) was found near Jois, on the so-called "Heide." There were thirteen pieces of pottery, including cups, bowls and pots, a bronze pin, and a bone implement.

Neolithic as well as Roman sherds were found in the sediment of the Geoles cave on Höllenstein, southwest of Vienna. The cave was probably a hiding place, for even in 1683, in the attack by the Turks, the population took refuge there.

The lower part of a Neolithic clay female idol of the Danube culture was found in Höbenbach, near Krems.[19]

Roman Period

Burgenland

A sculptured gravestone was found near the church in Horitschon (south of Neckenmarkt).

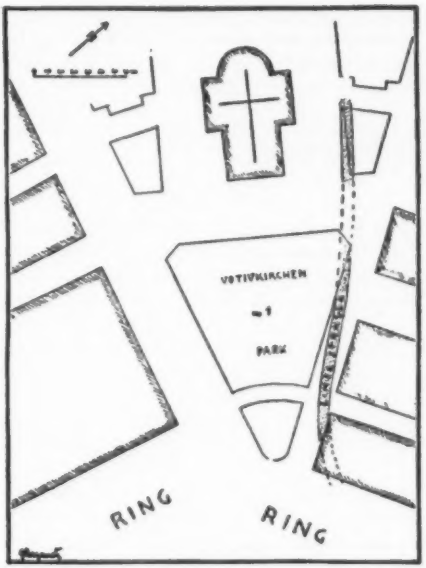

Fig. 4. Vienna. Vicinity of the Votivkirchenpark.

It represents an armed warrior with a long sword and wearing a leather cap, a pleated coat, and boots. He could be taken for a late antique

[18] A. Neumann is preparing a report for the *JOAI*.

[19] Cf. Mitscha-Märheim, "Vor- und frühgeschichtliche Völkerbewegungen an der Donau im Raume von Krems," in *950 Jahre Stadt Krems*, fig. 1.

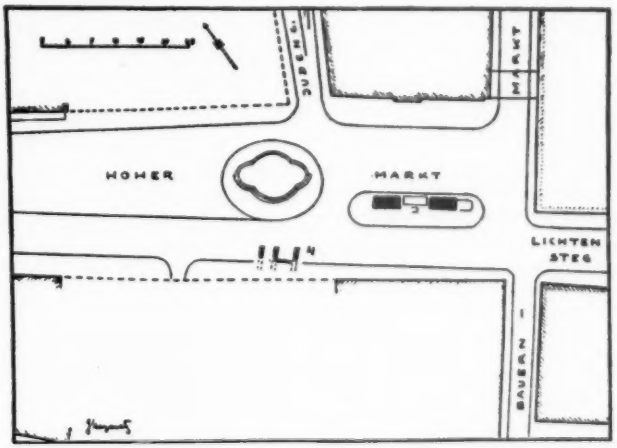

Fig. 5. Vienna. Vicinity of the Hoher Markt.

cavalryman (nomad), but this interpretation is contradicted by an ornament of Celtic form below the figure.[20]

Carinthia

Digging in VILLACH yielded interesting data on the Roman stratum of the city.[21]

Lower Austria

An interesting gravestone of a soldier of the *Leg. XV Apollinaris* from Bononia was found in the camp cemetery of CARNUNTUM. It shows half of the soldier's body [Halbfigur]; representations of the *ascia* and *norma* are under the inscription.[22]

Another rich stone-box grave comes from the country east of MAUTERN (cf. *AJA*, lii, p. 237). The wealth of perfectly preserved, beautifully made glassware, manufactured mostly in Cologne, is particularly striking. This belonged to a young woman of 20 and is dated in the third century.[23] Five more richly furnished graves have been found in the region; they belong to the late antique period and show signs of secondary burial.

Many terra sigillata finds have been noted near the estate of MITTERHOF (Bzh. Laa a. Thaya), which is evidence either of export or of another settlement north of the Danube at the time of the Marcomannic War.

During the excavations in RUPRECHTSHOFEN, G. Pascher was able to follow the Limesstrasse, and another street running parallel to it, between Krottental and Kolm. A series of new gravestones from this region will be described by H. Vetters in *Unsere Heimat*.

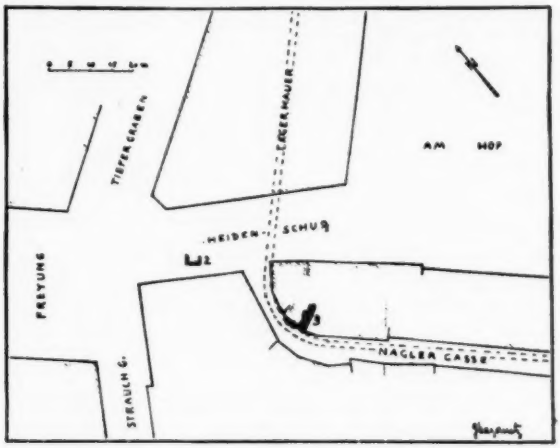

FIG. 6. VIENNA. VICINITY OF THE HEIDENSCHUSS.

Upper Austria

Bricks bearing the stamp *LEG(io) II ITAL(ica)*[24] were found across the Danube in ALTENBERG (northeast of Urfahr). The stamp must belong to the time before A.D. 200, for the epithet *pia fidelis* appears later.[25]

Tirol

Prehistoric and Roman finds in the mines and quarries of the Matrei region have become more frequent in recent years, especially in 1948. Rich

[20] Cf. Jacobstal, *Early Celtic Art*, pl. 15 d. H. Vetters is preparing a report for the *JOAI*.

[21] E. Wurzer, *Carinthia I*, 136/38, pp. 310 and 320 ff.

[22] Publication is in the hands of A. Betz.

[23] To be published in the *JOAI* by F. Kainz, H. Dolenz, and H. Vetters.

[24] Cf. *Römische Limes in Österreich*, xiii (1919), cols. 87 f., fig. 22, no. 16.

[25] *RE*, xii, col. 1472.

copper slag and antique crucibles indicate the existence of ancient mines in the region of Seeblas and Abfaltersbach, as well as on the Lottersberg—mines which reach back into the time of the Urn Field Culture.

Vienna

Roman walls were found during the building of the Heidenschuss-Irisgasse canal. They represent a part of the fortifications built along the old terrace of the Ottakringerbach for protection against enemies from the west.

The Roman city wall was uncovered in the cellar of the house at No. 26 Naglergasse during the building of air raid shelters (fig. 6). The wall was built of large, little-worked stones joined with rough, hard mortar. It was preserved up to 1 m. in height; the Mediaeval wall was placed directly over it. At right angles another wall formed part of a rectangular inner tower of the fortress. Two maniple barracks were also identified.

C. Recent Publications

Vol. xxxvii, 1948, of the *Jahreshefte des Österreichischen Archäologischen Institutes* has appeared.

Of the *Sonderschriften* the following should be noted:

Vol. xv, *Allerlei aus Inschriften*, by R. Egger (in press).

Vol. xv, *Das Militäramphitheater von Carnuntum*, by L. Klima and H. Vetters (in preparation).

Publications of the Academy of Sciences, representing the work of the Austrian Archaeological Institute include:

Vol. xix of the series: *Der römische Limes in Österreich:* "Die römischen Siedlungen und Strassen im Limesgebiet zwischen Enns und Leitha," by G. Pascher (in press).

Vol. xviii of the series *Schriften der Balkankommission:* "Dacia ripensis, Studien zur Geschichte der Spätantike am Nordbalkan," by H. Vetters (in preparation).

Of guide books may be mentioned:

Teurnia, by R. Egger (3rd, enlarged edition).

Flavia Solva, by E. Diez (in preparation).

Carinthia, i, vols. 136–138, will contain the following:

R. Egger (pp. 266–279) describes and analyzes a number of new inscriptions, and (pp. 206–208) proves that a "St. Nonosius" never existed, the name arising from a slang word Santonoas = Sanctus Athenasius.

H. Koban (pp. 247–266) discusses Roman roads leading over the Plöckenpan to Italy.

R. Egger (pp. 198–206) "Karnburg-Maria Saal," discusses the derivation of these names and the finds in the region.

H. Vetters (pp. 280–298) "Der heilige Bezirk von Wabelsdorf" reports on the excavations (cf. *AJA*, lii, p. 238).

Vols. xvii-xviii of *Unsere Heimat, Mitteilungen des Vereines für Landeskunde von Niederösterreich* have appeared. The preliminary report on the Ruprechtshofen excavation by H. Vetters is published on pp. 51–58 of vol. xviii (cf. *AJA*, lii, p. 239).

A partial list of the contents of *Burgenländische Heimatsblätter*, Vols. 8–10 (1946–48) is as follows:

R. Pittioni reports on new finds, mainly of prehistoric origin.

R. Stieglitz (Vol. 10, p. 101) reports on the excavations in Jois.

Partial contents of the *Mitteilungen der anthropologischen Gesellschaft*, vols. lxxiii–lxxvii are:

A. Barb (pp. 138–151) discusses prehistoric pole chariots.

F. Hančar (pp. 152–167), "Kaukasus-Hallstatt"; discusses cultural ties between southern Russia and Hallstatt.

Franz Jantsch (pp. 168–218) discusses late antique fortification in the Vorarlberg.

H. Mitscha-Märheim (pp. 219–224) describes a Gothic burial.

R. Pittioni (pp. 225–234) describes a Late Neolithic grave of the Baden culture.

Partial content of *Archäologia Austriaca*, vol. i follows:

Wilhelm Ehgartner (pp. 1–24) describes four skulls of the Early Bronze Age found in Oggau,[26] which show a continuous population strain to the present day.

M. Hell (pp. 38–72) describes prehistoric finds near Salzburg.

J. Kneidinger (pp. 72–81) reports on digging in Gallneukirchen.

[26] Cf. R. Pittioni, *Beiträge zur Urgeschichte der Landschaft Burgenland* (1941), pp. 27 ff.

H. Ladenbauer-Orel (pp. 81–88) describes a rhyton found in Vienna in 1939.

Volume 98 (1948) of the *Jahrbuch des oberösterreichischen Musealvereines* is published but not yet available.

The following may also be mentioned:

H. Mitscha-Märheim publishes "Vor- und frühgeschichtliche Völkerbewegungen im Raume von Krems" in *Festschrift zum 950 Jährigen Stadtjubiläum von Krems a.D.*, pp. 1–14, 1948.

R. Egger, *Der heilige Hermagoras*, Klagenfurt, F. Kleinmayr, is an important study of the late antique and Early Mediaeval periods.

A. Lesky, *Thalatta, der Weg der Griechen zum Meer*, R. Rohrer Verlag, Vienna, 1947, is a comprehensive study of the "Naturerlebnis" of an ancient people.

R. Pittioni, *Urzeitlicher Siedlungsraum in Österreich, Erläuterungen zu vier Karten*, E. Hölzel, Vienna, 1948, is concerned with the settlement of Austria from the earliest time to La Tène.

Lübke—Pernice, *Handbuch der Kunstgeschichte*, vol. i, "Die Kunst der Griechen," fifth edition by Dr. Berta Sarne, Paul Neff Verlag, Vienna, has just appeared.

NECROLOGY

STEPHEN B. LUCE, *Editor-in-Charge*

ERNST R. FIECHTER, born October 28, 1875 in Basel, Switzerland, died April 4, 1948 in St. Gallen, at the age of seventy two. He studied at the Institute of Technology (Technische Hochschule) in Munich and at the same time at the University under August and Friedrich von Thiersch and Adolf Furtwängler. He became a practical architect and at the same time he specialized in the history of the Greek theater building. After teaching in Munich, in 1911 he became professor of architecture in Stuttgart, where he remained after the rise of Hitler to 1937. Being deeply religious and belonging to the outlawed Christian Community (Christen Gemeinschaft) and also to the Anthroposophy founded by Rudolf Steiner, he returned to his homeland. He taught at Zurich and finally retired to St. Gallen where he became minister of the Christian Community.

His most important books are: *Die baugeschichtliche Entwicklung des antiken Theaters*, 1914, and *Antike griechische Theaterbauten*, 1930–1937, comprising 3 volumes on the theater of Dionysos (1935–6), also the theaters of Oropos, Oiniadai, Neupleuron, Sikyon, Megalopolis and Eretria. One last volume is said to be finished in manuscript.

Fiechter's careful and scholarly investigations belong among the most important contributions to the history of the Greek theater (Margarete Bieber)

ARCHAEOLOGICAL DIGEST

C. Bradford Welles, *Editor*

The Editor wishes to thank those who have helped him in abstracting the material for this issue of the *Digest*. They are Margaret Brine, John L. Caskey, G. F. Ekholm, Henry Field, Harold N. Fowler, A. Goetze, Paul L. MacKendrick, W. K. Pritchett, and M. I. Wiencke. The following are the principal journals reviewed: *Archiv für Orientforschung*, xiii (1939–1941) and xiv (1942); *Annual of the British School at Athens*, xliii (1948); *Bulletin de correspondance hellénique*, lxx (1946); *Hesperia*, xvii, 3 (1948); *Jahrbuch des deutschen archäologischen Instituts*, lix/lx (1943/44); *Orientalia*, xvi (1947) and xvii (1948).

GREECE

General

Losses and Survivals in the Dodecanese.—In *BSA*, xliii (1948), pp. 193–200, T. W. French publishes a supplement to the Stationery Office booklet, *Works of Art in Greece, the Greek Islands, and the Dodecanese*. He records the condition at the end of May, 1946, on the islands of Rhodes, Kos, Leros, and Patmos. There is a good deal of deterioration, but little serious damage to the classical, Byzantine, and Mediaeval buildings. (H.N.F.)

The End of Greek Art.—Kasimierz Michalowski in *BCH*, lxx (1946), pp. 385–392, traces the late stages of Greek art, and points out the continuance of certain superior features throughout the Roman imperial period. Although it can be stated in general that Roman imperial art is strongly hellenized and superficially uniform, several local styles can readily be distinguished. By way of illustration, a comparison is made between two somewhat similar heads, the Augustus from Prima Porta and the Augustus from Pergamum now in the museum at Stamboul. The former is an historical document in a formal, linear style; the latter is the spiritual portrait of an individual, and shows the influence of the emotional Hellenistic portraiture. Throughout antiquity Greece continued to create splendid monuments of architecture, but always of a conservative nature; and the art of this period, like that of the archaic, is mostly anonymous, because of the absence of truly great works. Artistic production ceased to be an individual matter and became collective. In the late second and early third centuries A.D. Athens produced great numbers of sarcophagi which were exported even to distant parts of the empire, and which show a high artistic standard. Greek portrait heads of the period of Constantine (particularly the "philosopher" heads) reveal a new renaissance of Greek art, a revival of that interior dynamism which was seen in the Augustus from Pergamum, and which contrasts strongly with the style of the porphyry group of Tetrarchs from Venice, for instance. The last great plastic monument of the ancient world, the reliefs on the base of the obelisk of Theodosius at Constantinople, shows a style already near the Byzantine. (W.K.P.)

Excavations.—Homer A. Thompson, "The Excavation of the Athenian Agora, Twelfth Season: 1947," *Hesperia*, xvii, 3 (July–Sept., 1948), pp. 149–196. (1) *Topography*. The plan of the southwest corner of the market square was clarified, the west end of the Middle Stoa was cleared, and there was brought to light a complex of civic offices (plan, p. 152), perhaps built after the Sullan sack of 86 B.C. and destroyed in the Herulian sack of A.D. 267. (2) *Tombs*. Two more Mycenaean chamber tombs were found on the north slope of the Areopagus close to the two discovered in 1939. Another chamber tomb of the same period, its offerings intact, came to light at the foot of the Hill of the Nymphs. (3) *Sculpture*. The rich finds included a late archaic Herakles, an Athena torso of a date early in the 30's of the fifth century, a small marble plaque of a horseman in the style of the Parthenon frieze, and a kerchief-bound head (Pl. 52) from the Nike parapet. (4) *Pottery*. The yield was enormous. (5) *Inscriptions*. 120 were found, of which the most important have already been published by Meritt (*Hesp.* xvii, pp. 1 ff.) and Ferguson (*ib.*, pp. 112 ff). (6) *Ostraka*. The number was virtually doubled. (7) *Miscellaneous*. These finds included terra-cotta figurines and molds, especially of the late Hellenistic and Roman periods; 3460 coins, including eight silver tetrobols of Histiaea (197–146 B.C.); weights and measures; and lamps. (P.L. MacK.)

Saul S. Weinberg, "A Cross-Section of Corinthian Antiquities (Excavations of 1940)," *ibid.*, pp. 149–241. The area (24×30 metres) along the east side of the Corinth Museum affords a relatively complete sampling of the material remains from the site as a whole. (P.L.MacK.)

Excavations at Ithaca, V.—In *BSA*, xliii (1948), pp. 1–124, W. A. Heurtley and Martin Robertson describe and discuss the results of excavations at Aetos in 1931, 1932, and 1934. The finds, chiefly pot-

tery, catalogued and discussed by Mr. Robertson are very numerous. (H.N.F.)

Architecture

ALCMAEONIDS AT DELPHI.—Pierre de la Coste-Messelière in *BCH*, lxx (1946), pp. 271–287, reexamines the problem of the part played by the Alcmaeonids in rebuilding the Temple of Apollo at Delphi. An examination of the material elements leads the present author to believe that the two pediments, with geison and sima, are surely of the Alcmaeonid period, the capitals probably so, and the frieze and epistyle quite possibly so. (W.K.P.)

THE GREEK THEATRE CAVEA.—In *BSA*, xliii (1948), pp. 125–192; O. A. W. Dilke discusses the cavea of the Greek theatre, its origin as determined by the roughly circular orchestra, and the names of its parts.

Vitruvius' ideal directions for the construction of a Greek theatre (Book v) fit almost exactly the theatre at Delos. The Greek odeum (the earliest known is the odeum of Pericles) was a square or rectangular building with pillars or columns supporting the roof. In Roman times the seating is always circular, but the building is square only if it has a roof. (H.N.F.)

GRANARIES.— Sp. Marinatos in *BCH*, lxx (1946), pp. 337–351, rejects Bulle's theory that the earliest Greek houses were circular. This theory was founded on the identification as houses of the circular buildings at Orchomenos. Marinatos believes these buildings to be not houses but granaries. They are dated Early Helladic I by the presence of Urfirnis ware. (W.K.P.)

EARLY CHRISTIAN BASILICAS.—Paul Lemerle in *BCH*, lxx (1946), pp. 319–328, reviews the status of studies on early Christian church architecture in Greece. (W.K.P.)

Sculpture

PEDIMENTS.—E. Lapalu in *BCH*, lxx (1946), pp. 299–311, analyzes the development and underlying significance of the central motif on Greek pediments. In the earliest pediments the motif has a mainly apotropaic significance, and even where motion is implied, the figure or figures are static and isolated from the rest of the scene. The introduction of movement is accompanied by a diminution in the prophylactic intention. The new tendency is seen in the Peisistratid Hekatompedon, where, on the front pediment, a human figure (Athena) replaces the old *apotropaion*, and where she takes an active part in the scene. This development takes place only gradually, however; and on other pediments of the same period conservatism prevails, notably at Aegina, where there is a conscious archaism and a "calculated hieratism" in the attitude of the central Athena. The Alcmaeonid temple at Delphi marks the introduction of the divine epiphany, the significance of which is mainly didactic and theological. At Olympia, the Zeus of the east pediment is still outside the action, preserving an abstract quality. On the Parthenon pediments, mythology is the dominant factor, and the central figure participates in the action; moreover on the west pediment the center is occupied not by a single figure but by a diverging group of two. These freer tendencies are carried further in the fourth century; the central space is no longer accorded any special importance, and heroic or merely human figures replace the gods in it; the single exception is the temple of Apollo at Delphi. This development throughout reveals a change in religious thought which parallels the change in the conception of the pedimental composition. (W.K.P.)

PYTHAGORAS.—In the first issue of the *JdI* to appear since the war (Vol. lix/lx, 1944/45; published in Feb., 1948, pp. 1–44). Ludwig Curtius in a leading article has reexamined the ascription of sculptures to Pythagoras and from his new grouping has presented a critical and interpretative analysis of the sculptor's work. The study is illustrated with excellent plates (mostly from new photographs) which further support the author's contention that Greek sculpture should be displayed and studied not flat against museum walls and under artificial lighting but where the figures may be viewed at all angles and if possible in the natural light of the out-of-doors. The author begins with a description of a head from the Museo Chiamonti in the Vatican (No. 388 A) which he believes to represent the work of Pythagoras and which he calls an "Apollo," although hitherto identified as a female head in the style of the peplos figures as represented by the Mariani statue from Candia. A head which was in the possession of a Roman art dealer in 1934 is shown notably by the execution of the hair to be a copy of the Chiaramonti head. The Pythagorean group is further illustrated by the Ludovisi Discobolos herm (Museo Nationale in Rome) and a Discobolos head from the Galleria Geographica in the Vatican. Chiefly on the basis of the former statue, a torso in Rome (Museo Nationale, No. 414), and the Boboli athlete in Florence, the author is able to develop an exhaustive interpretation of the anatomical proportions and rendition of musculature which he considers characteristic of the sculpture of Pythagoras. The reclining figure of Kladios alone of the pedimental sculptures from the temple of Zeus at Olympia he would associate with the Pythagorean group; he rejects the ascription of the Valentine torso, copies of an Apollo on coins from Croton, and certain gems with representations of Philoctetus which have been described as copies of a work of Pythagoras. (M.I.W.)

COINS AND GREEK STATUES.—L. Lacroix in *BCH*, lxx (1946) pp. 288–298, offers observations on this subject, of which he hopes later to make a complete study. In many cases coins aid in the reconstruction or identification of fragmentary statues. (W.K.P.)

Vases

WHAT IS PROTOGEOMETRIC?—In *BSA*, xliii (1948), pp. 160–172, V. R. Desborough discusses the Protogeometric style, for it is a style, not a period. It has geometry as the essence of its decoration, differing from the Geometric style proper in its treatment of the decoration (H.N.F.)

TRAVEL AND REPOSE.—H. Metzger in *BCH*, lxx (1946), pp. 374–384, explores the themes of travel and repose in fourth century Attic red-figured pottery. (W.K.P.)

CYPRUS.—F. Mayence in *BCH*, lxx (1946), pp. 369–373, publishes a Cypriote vase in the Archaeological Museum of the University of Louvain. It is an oenochoe with an elongated, almost cylindrical body; the mouth is painted to represent a human face, with eyes, nose, and mouth. Its shape, technique, and decoration indicate a date between the eighth and sixth centuries B.C. (W.K.P.)

Inscriptions

INSCRIPTIONES GRAECAE, V, 1.—In *BSA*, xliii, (1948), pp. 209–259, A. M. Woodward contributes "some afterthoughts" concerning Spartan inscriptions, mainly of the Imperial age, published in *IG*, v, 1, and in *BSA*, xxvi–xxx. (H.N.F.)

THE STRAIGHT IOTA IN CORINTHIAN EPICHORIC INSCRIPTIONS.—In *BSA*, xliii (1948), pp. 201–208, L. H. Jeffrey examines the use of the straight iota in Corinthian epichoric inscriptions. He finds that the crooked iota was still in use in the last decade of the sixth century and the straight form was established by ca. 475 B.C. (H.N.F.)

DELPHI.—J. Bousquet in *BCH*, lxx (1946), pp. 32–41, brings together eight fragments of a stele containing proxeny decrees of the third century B.C. (W.K.P.)

Miscellaneous

TRIPODS FROM THASOS.—C. H. Emelie Haspels in *BCH*, lxx (1946), pp. 233–237, publishes two terra cotta tripods, found near the Odeion at Thasos. Each consists of three panels engraved with fantastic animal figures, separated by openwork tripods. (W.K.P.).

TURKEY

BIBLIOGRAPHY.—*Türkiyenin Arkeoloji, Epigrafi ve Tarihi Coğrafyasi Için Bibliyografya* (Bibliography for the Archaeology, Epigraphy and Historical Geography of Turkey), by Arif Müfid Mansel. Türk Tarih Kurumu Yayınlarından (Publications of the Turkish Historical Society) xii. Seri—No. 1. Pp. xvi+616. Ankara, 1948. Dr. Mansel's bibliographical compilation constitutes an important and valuable work of reference. Although written in Turkish and primarily for Turks, it presents many thousands of titles in their original languages[1] and is therefore useful to the whole scholarly world. Particularly welcome are the notices of Turkish archaeological studies, many of which are basic and indispensable, but not always widely enough known in western Europe and America.

Enterprising members of the Turkish Historical Society like Dr. Mansel, by their excavations and other researches, have in a few years earned our gratitude and admiration. At the same time they have presented students of Anatolica with a new obligation—that of acquiring at least a working knowledge of the modern Turkish language.[2] As a first step, we may begin to use the present publication as an authority for the spelling of Turkish names. To be sure, Turkish spelling in the modern alphabet is not yet perfectly standardized; but there is now no possible excuse for books in English to display monstrosities like Sendschirli for Zincirli or Tschanakkalessi for Çanakkale, second-hand designations that were once considered our only refuge from the Arabic script.

Bibliography is classified in the present work under twelve main headings: I, works of general information which deal chiefly with Greece and the East but have also a bearing on lands that are now Turkish; II, General Works on Anatolia; III, miscellaneous special works on Anatolia; IV, Greek and Roman inscriptions; V, archaeological maps of Anatolia; VI, a topographical bibliography by districts, cities, villages, mountains, rivers, etc.; VII, Istanbul; VIII, the environs of Istanbul; IX, Thrace (Turkey in Europe); X, museums and other collections in Turkey; XI, publications of archaeological and other scientific societies; XII, additions and corrections. Finally there are indexes of geographical names and of authors and publishers.

Books and articles are listed chronologically by date of issue, from the sixteenth century down to 1939 (references to ancient literature are not included). In Chapter VI (pp. 77–434) the chronological arrangement is maintained within the sections on the various

[1] Chiefly English, French, German, Greek and Italian; titles in Russian, Polish, Czechish, Hungarian and Rumanian are translated into Turkish.

[2] H. C. Hony's excellent Turkish-English Dictionary, published by the Clarendon Press in 1947, will greatly facilitate the work of Anglo-Saxons.

places, which themselves are in alphabetical sequence from *Açana* to *Zizima;* and a similar alphabetical subdivision is employed in Chapter VIII (pp. 500–529). When different authors have referred to the same place by different names we find entries under each: for example, one page of bibliography on *Izmir* and five on *Smyrna*, two on *Konya* and one on *Ikonion*. A number of helpful cross-references are included in cases like these, but still further cross-indexing might have been valuable; Aeolian Larisa, for instance, is listed under L, with the present name Buruncuk in parentheses, but there is no reference to it under B. The compiler was aware of this difficulty, and in general minimized the references to small villages, whose names are subject to change.

In the selection of material for inclusion in the bibliography Dr. Mansel was obliged by the war to rely chiefly upon the libraries available in Turkey. In the preface, signed in 1944 (four years before publication), he describes the origin and scope of the compilation and expresses a hope that supplements may be issued at intervals of about ten years.

In general the work appears to reflect proportionately the number of books and articles that have been written on the various topics, greater and smaller. Antiquity receives most attention, but the Middle Ages are not neglected, twenty pages being devoted to the churches of Istanbul. Classical antiquity, furthermore, is by no means slighted in favor of the more specially Anatolian cultures. Under *Boğazkoy* we find five pages of entries, under *Kültepe* only one; whereas *Ephesos* has fourteen, *Pergamon* eighteen, and *Troia* twenty-one.

No bibliographical compilation will appear perfect to all, if indeed to any, who use it. Some articles on (e.g.) the Hittites, that are listed in Chapter I, might perhaps better appear in Chapter II, as might also some accounts of travels which are included in Chapter VIII because they mention Constantinople. By and large, however, the system, which is modelled after that of Mau's catalogue of the library of the German Institute in Rome, is orderly and usable. Misprints and typographical inconsistencies can be found, but these are all but inevitable in a book containing quotations from many languages. In general the editing is accurate and the printing admirably clear. Sincere thanks and hearty congratulations to Dr. Mansel for his valuable contribution to scholarship. (J.L.C.)

Archeological Activities in Anatolia.—Current reports on excavations on Turkish territory used to reach us late and in a form which is not accessible to everybody. Mrs. Halet Çambel's report in *Orientalia* xvii (1948), pp. 255–261 is therefore highly welcome. Drawing on preliminary reports and personal communications she deals with undertakings in Alaca Höyük, Elbistan, Karatepe, Tarsus, Mersin and Açana. (A.G.)

Prehistoric Cemetery near Babaköy.—In *AOF*, xiii (1939), pp. 1–28, Kurt Bittel presents the results of his examination of a prehistoric cemetery near Babaköy in Western Anatolia. Finds from there had been offered on the market; Bittel arrived in time to find at least one tomb intact. It is a pithos tomb apparently used twice within a short period of time. The pottery and the other meager finds that could be salvaged attribute the cemetery to the Yortan civilization which was contemporaneous with Troy I and the earlier part of Troy II. In this civilization the dead were buried outside the settlement, not within it as in Central Anatolia. (A.G.)

The Hittite Museum in Ankara.—The Directorate of Antiquities of the Turkish Government has united all surviving Hittite sculptures in Ankara where they have been assembled in the so-called Bedestan, an old market which has been restored for this purpose. Professor Güterbock, the Hittitologist of the University of Ankara has closely cooperated with the museum authorities in the task and helped to rebuild in the large hall of the Bedestan the monuments in their proper context. It is now possible to view there the long sequences of reliefs from Karkemish, the sculptured gate from Sakce Gözu, the front from Alaca Höyük, the Lion gate from Malatya, and a large number of isolated pieces. A report on the Bedestan is found in *AOF*, xiii (1941), pp. 345–348; it has been superseded in the meantime by the official guide-book *Ankara Bedesteninde bulunan Eti Müzesi büyük salonun kilavuzu* (Guide to the Hittite Museum in the Bedestan at Ankara) (Istanbul, 1946) which was written jointly by H. G. Güterbock and Nimet Özgüç. (A.G.)

Cylinder Seals from Anatolia.—For questions of chronology synchronisms with areas where the sequence of cultural developments is well known are all important. In the light of Mesopotamian archaeology K. Bittel discusses in *AOF*, xiii (1941), pp. 299–307 the few seal cylinders which have been found in Anatolia—one from Troy, one from Alişar, one from Alaca Höyük, three from Kültepe. They confirm the existence of relations between Mesopotamia and Anatolia in the Jamdat Nasr period (ca. 3000 B.C.) and during the Akkad period (ca. 2400 B.C.). They do not help yet in dating Anatolian layers more precisely. (A.G.)

Cult Standards from Alaca Höyuk.—Among recent finds on Anatolian soil the Copper Age tombs of Alaca Höyuk (ca. 2200 B.C.) are no doubt the most significant both by their richness and the perspectives they open to the archaeologist. Among their inven-

tories the "cult standards" – bronze disks adorned in geometric patterns and showing in part bulls and stags – are particularly noteworthy. In *AOF*, xiii (1941), pp. 289–298 F. Hančar expresses the view that both these animals represent the "Great Mother." [The argumentation is not convincing. Comparable Mesopotamian monuments establish merely parallels. It would be more pertinent to investigate the religious significance of the bull and the stag in Anatolia.] (A.G.)

Terra Cottas. – Alfred Laumonier in *BCH*, lxx (1946), pp. 312–318, publishes a group of twenty-two terra cottas in his own collection, purchased at Izmir, and possibly from the ancient factory at Smyrna; they show similarities to the Gaudin collection in the Louvre, of undoubted Smyrniote origin. The group includes various known types, most importantly, a number of grotesque heads, some realistic, some pathological. Laumonier appends a paragraph on the possible usage and origin of these latter, suggesting that they may have been modelled from life by students in the famous medical school that existed in Smyrna in the first century B.C. (W.K.P.)

SYRIA

General and Miscellaneous. – The Directorate-General of Antiquities of Syria has published an English translation (by Mesdames E. Will and D. Schlumberger) of the guide-book to *Palmyra*, "*The Bride of the Desert*," by Jean Starcky and Salahud'din Munajjed (Damascus, 1948).

Syria between 950 and 720 B.C. – In *AOF*, xiv (1942), pp. 153–172 A. Jepsen discusses the relations between Israel and Damascus in the light of Near Eastern history. In the period considered the history of Syria and Palestine consists of continuous fighting between the national states that existed there – "Hittite" in the north, Hebrew in the south – the infiltrating Arameans and the Assyrians who then expanded toward the Mediterranean. Damascus plays a leading part in this fighting. [The period on which the finds of ancient inscriptions at Karatepe promise to throw new light has recently been the subject of two other treatments, one by K. Elliger in *Festschrift Otto Eissfeldt* (1947), 69–108, the other by B. Landsberger in his monograph *Sam'al* (1948).] (A.G.)

EGYPT

Proportions of Egyptian Statues. – According to H. Senk, *AOF*, xiii, (1940), pp. 135–144 Egyptian statues show a definite regularity in their proportions. If one takes the head (from top to shoulder), as the determining unit, it more or less equals the distances from shoulder to waist, from waist to hip, from hip to knee, and from knee to ankle. (A.G.)

Egyptian Temple Statues. – Egyptian ideas concerning the relationship of god and man underwent a deep change in the New Empire. E. Otto, in *Orientalia*, xvii, (1948), pp. 448–466, makes use of the temple statues of the New Empire and their inscriptions to demonstrate it. The inscriptions imply that the man whom they represent promises to protect the god and expects the god's protection in turn. He is represented as carrying his gods on his hands. Man's personality has become sanctified to such a degree that he can take part in the divine while still alive in this world. (A.G.)

Scarab of Amenhotep III. – To the New Kingdom scarabs with the picture of a pharaoh defeating his enemy D. Opitz in *AOF*, xiii (1939), pp. 55–58 adds an early example with an inscription of Amenhotep III. (A.G.)

IRAQ

Religious Rites in the Uruk Period of Mesopotamia. – Against the view that before the Early Dynastic period worship in Mesopotamia was aniconic Mrs. E. Douglas Van Buren points in *AOF*, xiii (1939), pp. 32–45 to the scenes depicted on Uruk seals and other monuments of the period. They testify not only to the existence of a developed ritual but also to the worship of several well-defined deities conceived in anthropomorphic form. There are in particular a Mother-goddess and her bridegroom, gods who in different places bear different names. (A.G.)

The Chronology of the Prehistoric Periods in Mesopotamia. – Since the discoveries at Mari Mesopotamian chronology has undergone a substantial lowering. This cannot be without consequences for the chronology of the prehistoric periods. By investigating the sequences observed at the main sites and by rejecting the occurrence of 'Ubaid pottery as chronological clue F. Wachtsmuth (*AOF*, xiii (1940), pp. 194–203) arrives at the conclusion that the so-called Uruk and Jamdat Nasr periods, and even part of the Halaf period, fall within the first half of the third millennium. [A shortening of the early chronology was indicated; but this one seems to be excessive.] (A.G.)

The Seven Dots on Mesopotamian Seal Cylinders. – The view is customarily maintained that the seven dots found often on Mesopotamian monuments and particularly on seal cylinders – we are provided with an exhaustive and lengthy list of the occurrences – are symbols of the Pleiades, a constellation to which astrology ascribed an unfavorable influence on mankind. In *AOF*, xiii (1941), pp. 277–289 Mrs. E. Douglas van Buren argues that this is due to relatively late associations. Originally the seven dots represented

the stones used in casting lots; this means of determining man's fate was late placed or refound in the sky. (A.G.)

EARLY SUMERIAN SCULPTURES.—A Swiss collector acquired from a Paris dealer six rather crude small sculptures which E. Borowski publishes in *Orientalia*, xvi (1947), pp. 481–490, plates XXXV–XLIII under the label "early Sumerian." According to the author they represent masterpieces of previously unknown types and style. Before pronouncing oneself on the pieces one should like to see something of the kind recovered in actual excavations. Otherwise one runs the risk to consider something as unique that in reality is a fake. (A.G.)

THE AKKAD DYNASTY AND EGYPT.—A. Ungnad devotes a short note in *AOF*, xiv (1942), pp. 199 ff. to the possibility of an armed clash between Narām-Sîn of Akkad (23rd cent. B.C.) and Egypt. The Akkad king records a victory over Manium of Makkan; alabaster vases marked as booty from Makkan look exactly like Egyptian pieces of the 5th or 6th dynasty. Manium must not be identified with Menes, but he may well have been one of the last kings of the Old Egyptian Empire. (A.G.)

GATE KEEPERS ON MESOPOTAMIAN SEALS OF THE AKKAD PERIOD.—In the opinion of Mrs. E. Douglas Van Buren who published an article on this subject in *Orientalia*, xvi (1947), pp. 312–32 (with an additional note *ibid.*, pp. 477–80) the minor gods who watch the gate of certain gods on either side are twins, Akk. *talīmū*. She lists six such pairs. Lugal-girra and Meslamta-ea, Lú-làl and Latarak, Dumuzi and Ningizzidda, Kettu and Mīšaru, Girru and Nusku, Gilgameš and Enkidu. An attempt is made at identifying the guardians found on seals of the Akkad period with these pairs. [Comment. The combination which the authoress makes of the three concepts guardian, twin, and talīmu is arbitrary. Only the two first pairs mentioned are known to be twins, only the third pair to be door keepers; and talīmu does not mean "twin."] (A.G.)

THE HORNED CROWN OF A BABYLONIAN GOD.—Mesopotamian gods are recognizable by a horned crown which they wear. Such a crown, made of bronze, greatest diameter 15 cm.—either an exvoto or part of a statue—forms part of the collection of Dr. R. Schmidt in Solothurn (Switzerland) and is published by E. Borowski in *Orientalia*, xvii (1948), pp. 294–298 (with plates 25–28). (A.G.)

THE ASSYRO-BABYLONIAN GOD NUSKU.—The god has previously been explained as the embodiment of the lunar crescent. Drs. Hildegard and Julius Lewy argue in *Orientalia*, xvii (1948), pp. 146–159 in favor of a new interpretation which sees in Nusku the planet Mercury in his role as either the morning or the evening star, his counterpart being Bilgi. The "bright staff" which Nusku and also Nabû—later identified with Mercury in its double role—hold is the zodiacal light. His epithet *mār šelāšē bumbuli* means "son of the 30th (day) of (Mercury's) absence." The name Nusku may be of West Semitic origin and since it interchanges with Nashu, Nasuḫ, a fact which points to derivation from *nšḫ*; its original meaning may be "absence" or "absent." (A.G.)

HORSE-BITS FROM MESOPOTAMIA.—Among the numerous cultural changes which characterize the second millennium B.C. in the Near East the introduction of the light chariot drawn by horses is of particular importance. To further its clarification H. A. Potratz studies in *AOF*, xiv (1941), pp. 1–39 the horse-bits that have come down to us. He distinguishes two groups. The first—straight Knebel and composite mouth-piece—is dated to the second half of the second millennium and connected with the ethnic movements that brought the horse into Mesopotamia and Egypt at that time. The second—circular Knebel and straight mouth-piece or mouth-piece halved and each half rigidly connected with its Knebel—is already used contemporaneously with the first, but becomes more usual between 800 and 500 B.C.; comparative material is spread over all the territory between the Caucasus in the east and Hungary in the west. [In the historical concepts of the author the Kassites play a role which seems not justified by the information to be gathered from the available sources.] (A.G.)

FRAGMENT OF A STONE LID FROM THE TIME OF TUKULTI-NINURTA I OF ASSUR.—D. Opitz discusses in *AOF*, xiii (1940), pp. 219–225 a fragment (about a quarter) of a circular lid which was excavated in Kar-Tukulti-Ninurta and has been first published by W. Andrae. It is important because of the relief with which it is adorned, the more so as little is known about early Assyrian sculpture. The upper register shows a hero defeating an enemy and corpses filling the available space; of a middle register only the upper part of a man, the heads of a team of horses and parts of the head of the man who rides on the chariot are preserved. (A.G.)

ASSYRIAN RELIEFS.—When after the end of the war the treasures of the Vatican Museum were taken out of their hide-outs three fragments of Assyrian reliefs came to light which had been stored away since 1855. They are published by A. Pohl in *Orientalia*, xvi (1947), pp. 459–463, plates XXIX–XXXIII. They came from Nineveh and seem to belong to the time of Assurbanipal. With them go two fragments of inscriptions on alabaster, one of them demonstrably from Nimrud (Kalakh). (A.G.)

THE PREPARATION OF PERFUMES IN ASSYRIA.—Texts from the German excavations in Assur dealing with this subject are published by E. Ebeling in *Orientalia*, xvii (1948), on 49 pages of autographs. Their philological treatment—including that of similar texts previously presented—is simultaneously begun (pp. 129–145, 299–313). (A.G.)

IRAN

PERSIAN STANDARDS.—A pair of roughly circular bronze "standards"—one in Berlin, the other in Paris, both known for more than 40 years—is re-examined by F. Sarre in *AOF*, xiv (1942), pp. 195–199 in the light of the numerous Luristan bronzes which have since then come to light. The author claims the standards as Persian and dates them with some reserve before 1000 B.C. The view is expressed that the four demons in Knielauf arranged in the center of the pieces in some kind of a swastika and the bulls supporting the circular part establish a connection with the cult of the sun. (A.G.)

PAINTED POTTERY FROM TRANSCAUCASIA.—Transcaucasia is a territory which is of great potential interest to the archaeologist of Anatolia as well as of Mesopotamia. It is regrettable that our knowledge of it is so meager. The more gratifying is the presentation, based on Russian sources, which F. Hančar gives in *AOF*, xiv (1944), pp. 284–298; it unites the available information on the painted pottery of the region. It is not yet sufficient for a comprehensive picture, but it assures the existence of interrelations. It holds out the hope that we shall obtain knowledge of the cultural sequences of Transcaucasia in the near future and thus be enabled to approach the larger problems with better expectations for success. (A.G.)

ITALY

SCULPTURE.—In the *JdI*, lix/lx (1944/45), pp. 45–68, Paul v. Blankenhagen publishes a colossal head from the Palazzo dei Conservatori (Rome) which he identifies as a fifth century portrait of Trajan. Several of the later Roman emperors regarded Augustus and Trajan as most exemplary of beneficent rule and their physical characteristics were frequently reproduced in imperial portraiture. The dating of these later portraits is to be determined primarily upon stylistic grounds. The head from the Conservatori bears close resemblance in the rendering of hair and eyes to the heads in Aquileia and a head of the emperor Eugenius from the second quarter of the fifth century. The author places it among the imperial portraits belonging to the end of reign of Honorius or the beginning of that of Valentinian III, both of whom claimed descent from Trajan through Theodosius. The portrait is one of the last extant examples of a classical revival in art which had begun under Theodosius. (M.I.W.)

SPAIN

CAVE PAINTINGS.—In the north of Spain, the Basque country, the land is honeycombed with caves containing pre-historic works of art. Jose Miguel de Barandaran in "Las Cavernas Prehistoricas en la Mitologia Vasca," published in *Cuadernos de Historia Primitiva* (1946), 2, pp. 71–89, reports on the findings of twelve of the caves which have been excavated. There are paintings and engravings of bulls, horses, birds, goats and serpents. They represent in that pre-historic phase as they do today, ideas and popular superstitions which the Basques call "oi." There are also included figures part human and part animal "mari," figures human with bird-like claws "maide."

The writer quotes a series of legends he found still in use in this area. They reflect the same figures, the same legends as those used by paleolithic man. This does not necessarily mean that the Basques are direct descendents of Paleolithic man, but the idea deserves consideration. (M.B.)

VISIGOTHIC CEMETERY.—Joachim Werner, *ibid.*, (1946), 1, pp. 46–50, reports on the excavation of 1941 in the extensive Visigothic cemetery of Castiltierra. (M.B.)

NEOLITHIC AGE.—In *ibid.*, pp. 5–33, San Valero Aparisi presents evidence relative to the arrival of the Neolithic Age in the Hispanic Peninsula. He maintains that this was something more than an industrial phase and presents the following evidence:

a. A change in the appearance of the landscape.
b. A change in the human type.
c. A new economy to support an increased population.
d. A change in tools motivated by new needs.
e. A displacement of social forces, the herdsmen and agriculturists becoming superior to the hunter.
f. A change of foods brought about by the invention of bread and the utilization of milk.
g. A displacement of spiritual forces.

The earliest date given this new culture places the Age in the Valleys of Mesopotamia and the Nile about the year 5200 B.C. Two branches were diffused westward, one into the Danubian area and the other through North Africa. The writer presents detailed evidence as shown in work patterns, herding, agriculture, ceramics, arms and megalithic monuments to prove that the Neolithic which arrived in the Hispanic Peninsula around 2500 B.C. followed the North African route. The new culture found fertile fields and spread north to the banks of the Rhine. (M.B.)

U.S.S.R.

CRIMEA.—P. Schultz in VOKS *Bulletin* No. 55, pp. 59–67, 1948, describes excavations since 1945 at

Neapolis near modern Simferpol. This Scythian town was protected by a cliff on the east, a deep ravine on the west and by a defensive wall on the south.

In the residential section a large building (*ca.* third century B.C.) was found with a cellar cut into the cliff; nearby were grain pits. The tiled roof of red, yellow and green plaster and polished brown clay indicates the decorations of an elaborate Scythian house. Trade contacts were indicated by fragmentary Greek amphorae from Rhodes and Cnidus. Here were also found coarse and polished Scythian ware and carved bone ornaments of Greek design but embellished with stylistic elements from their local wood-carving.

Excavations near the southern sector of the defense wall (8.4 m. thick) revealed that it was constructed of large boulders reinforced by stone facings. Five grain pits were hewn into the rock near this wall and nearby were hearths with pottery vessels for baking flat cakes. Heaps of round pebbles were probably used as sling-shots.

A square mausoleum of polished stone contained royal Scythian graves. This building (second century B.C.) originally had a roof of wooden beams, probably brick-covered. A door led to the eastern wall and a stone staircase led to the top of the wall.

In the northwest corner stood a half-sunk sepulcher cut into the rock. Here lay a Scythian king *a tergo* with his head facing west, his left arm extended and his right flexed. Three gold-tipped spearheads and a sword with a silver hilt lay at his feet. Another sword, a helmet, and bronze ornaments were on the right side. Bronze buckles, from which hung a combined bow case and quiver covered with gold plate, were ornamented with a serpent and a swan in evolved naturalistic style. His clothing was stitched with golden thread and covered with gold leaf decorations. Seven hundred Greek and Scythian articles of gold were found. Three round plates depicting the sun god were sewn onto the cap. The coat was bordered with golden stars, bees, petals, drops and stylized waves. Among special objects were cordate ornaments, round shields and lions' heads with inlaid paste eyes and in their mouths golden chains with round pendents. The king's arms and legs were entwined with golden coils. Hundreds of tubular gold beads were sewn into the shroud now disappeared.

In the center of the mausoleum was a gilded and carved wooden sarcophagus painted pink and blue. Although crushed by the fallen roof, reconstruction showed the rectangular sarcophagus to have been covered with garlands of laurel and acanthus leaves tied with rosettes and ribbons carved on the sides with legs shaped like sphinxes and griffins. Gilded columns once supported the canopy, superimposed by a centaur and a lion. This queen's sarcophagus of the first century B.C. had unfortunately been pillaged in antiquity. However, some objects were salvaged; these included a massive ring of twisted gold with two stones inset, a golden medallion with an image of the sun, a gold needle and earrings.

Four horses had been buried between these two tombs. Large colored paste beads adorned the forehead of one of the horses. These graves had also been looted.

In addition, seventy human skeletons were arranged in tiers of wooden chests, some containing the entire family. Felt, reed mats or animal skins lined some of these coffins. The oldest graves, attributed to the second and first centuries B.C., lay on the floor above a thick stratum of stone flakes. The majority, of these skeletons lay *a tergo*, legs extended, or rarely crossed. One arm was usually folded across the chest. Children's skeletons were often turned on the side. Near the head were placed wine and perfume vessels and the bones of sacrificed animals.

Among the more important vessels was a black polished censer with an engraved image of the sun. In addition to weapons, bronze bits, polished bronze mirrors there were beads, necklaces, and pendents of sard, jet, chalcedony, amber, amethyst, rock crystal, Egyptian paste and Phoenician glass. There were 1,327 golden objects found in the mausoleum.

The second important discovery was that of five painted vaults in the necropolis where twenty-eight rock-cut tombs were excavated. Vault No. 9 was decorated by a master artist. A colored border of triangles and zigzags around the top of the walls resembled an embroidered canopy. Opposite the entrance on the left was painted a square rug with nine checks framed with arrows. Beside this stands a bearded Scythian, a coat over his shoulders, and holding a lyre. In the center is a mounted hunter with a spear in his right hand. On the right a red and a black dog are attacking a wounded boar. These decorations still retain traditions of the nomad tent. At the same time the snow-white walls, niches and decorations suggest a Ukrainian cottage. Here at Neapolis evolved artistic achievements resulting from culture-contacts with the north, east and Mediterranean area. (H.F.)

CENTRAL ASIA.—S. Rudenko found recently at Pazyryk Kurgan in the Altai Mountains a mummified body tattooed with wild animals. Within this tomb was a chariot, leather carpets with embroidered animal figures, wooden diadems covered with thin golden laminae, bronze mirrors, carved furniture, jewelry and furs. Previously, Rudenko had found a mummified woman nearby; her long fingers and the number of stringed instruments in the tomb indicate that she was a talented musician. From an adjoining kurgan twenty-eight mummified horses with rich trappings

were found some years ago. (From the United Press, Moscow, February 19, 1949.) (H. F.)

CHINA

BIBLIOGRAPHY.—The National Geological Survey of China has published (Nanking, July 1947), a Bibliography of Chinese Geology: Bibliography of Geology and Geography of Sinkiang (pp. 213), which will be of use to archaeologists.

CENTRAL AMERICA

SANTA LUCIA COTZUMALHUAPA.—J. Eric S. Thompson in *An Archaeological Reconnsissance in the Cotzumalhuapa Region, Esquintla, Guatemala*, Contributions to American Anthropology and History, ix, No. 44, Carnegie Institution of Washington, 1948, has supplied us with a much needed review and discussion of this perplexing and highly important archaeological zone of the Pacific Coastal Region of Guatemala. All of the stone sculptures are illustrated in excellent photographic plates and a detailed analysis of the Cotzumalhuapa style is given. Brief stratigraphic excavations are reported with an analysis of the pottery, artifacts, and all available information on architecture. A full discussion of the early historical sources on the distribution of peoples and languages—especially of the Pipil, leads Dr. Thompson to the tentative conclusion that these Nahuat-speaking people were responsible for the Cotzumalhuapan remains. The principal period of occupation and of sculptural activity is shown to have probably been during the last half of the Classic Period. The dominating influence is clearly from Mexico, and Dr. Thompson suggests that some unknown center in southern Mexico may have been its point of origin. (G.F.E.)

PLUMBATE POTTERY.—In *Plumbate, A Mesoamerican Trade Ware*, by Anna O. Shepard, Publication 573, Carnegie Institution of Washington, 1948 we have the most complete and detailed analysis to date of a single Mesoamerican ware. It is a pottery type of exceptional interest and importance for its unique glazed surface and for its wide distribution in trade throughout most of the Mesoamerican area—making it of especial value in the cross correlation of cultures. Miss Shepard's study is one not only of technological analysis, in which field she has made the most significant contributions to American archaeology. Here she describes and discusses all known examples of the ware from the various "archaeological" points of view as well, such as form, decoration, distribution, and chronological position, but maintaining the high standards of scientific precision characteristic of her technical work. It is a highly important monograph, certainly the most complete pottery study of its kind we have for the entire American field. (G.F.E.)

HIGHLAND GUATEMALA.—The excavation of the site of Kaminaljuyu in the suburbs of Guatemala City has been of exceptional importance in the development of Mesoamerican archaeology, for it has provided the first clear demonstration of the contemporaneity of the first half of the Classic or Old Empire period of the Maya and the fully developed Teotihuacán culture of central Mexico. The complete report appears in *Excavations at Kaminaljuyu, Guatemala* by Alfred V. Kidder, Jesse D. Jennings, and Edwin M. Shook, Publication 561, Carnegie Institution of Washington, 1946. The excavations detailed here were made in only two of the many mounds of the site, but both of them contained a number of tombs richly stocked with elaborately decorated pottery, jade objects, mosaics, etc. These materials are analyzed in exhaustive detail and profusely illustrated in black and white and color plates. Included in the introduction and final discussion is the best general review of Mesoamerican prehistory available at the present time. (G.F.E.)

FORTIFICATIONS.—Pedro Armillas in *Fortelezas Mexicanas*, Cuadernos Americanos, vol. 5, Sept.-Oct., 1948, pp. 143–163, discusses the previously unexplored situation in regard to the presence and significance of fortresses in Mesoamerica. He points out that the construction of defenses or the use of defensible positions for centers of population is a feature limited almost exclusively to what he calls the Historic Period. (The Tula-Toltec, Aztec Periods in Central Mexico and the Mexican and later periods in the Maya area.) This is in marked contrast to the apparently peaceful aspect of the previous Classic Period and would seem to indicate quite different socio-economic conditions. It is a provocative essay in line with the present trend toward an attempt to analyze the basic social history of the native American civilizations. (G.F.E.)

SMOKING PIPES OF MEXICO.—*Pipas Precortesianas* by Muriel N. Porter, *Acta Antropologica*, vol. iii, no. 2, Mexico, 1948, is an excellent detailed study of the classification and distribution of smoking pipes in the New World, with especial emphasis on those of Mexico. It is shown that pipes are limited to only certain areas of Mexico and to a relatively late period in the known cultural sequence.

A generously proportioned English summary of the text is given and there is an introduction by Chita de la Calle which includes considerable data on the various uses of tobacco by the Aztec.

Acta Antropologica is issued by the students of the National School of Anthropology of Mexico, and is devoted to the publication of theses presented for degrees in the School. (G.F.E.)

BOOK REVIEWS

DOROTHY HANNAH COX, *Editor*

MANUAL OF ARCHAEOLOGICAL SURVEYING, by *A. B. Detweiler*, Pp. x+56 and two appendices, figs. 24. American Schools of Oriental Research, New Haven, 1948, $1.75.

To this manual Professor W. F. Albright contributes a foreword in which he sums up the work as "just what is needed to bridge the gap between architects and excavators" and adds that "few archaeologists are so well equipped . . . to write a manuel of this kind as Professor Detweiler"; a statement with which the reviewer readily agrees. Detweiler covers the whole field of archaeological surveying from the materials required, a rather lavish list; through all phases of field work, clearly described and including interesting paragraphs on aerial surveys; to the preparation of drawings for the final publication.

Appendices of logarithmic tables and sample sheets from a field note book enhance the usefulness of the manual as a vade-mecum for the surveyor.

CHESHIRE, CONN. D. H. COX

GUIDE TO THE GREEK, ROMAN, ENGLISH AND CHINESE COINS AT THE ASHMOLEAN MUSEUM, HEBERDEN COIN ROOM. Pp. 51; pls. 11 and frontispiece. Oxford University Press, 1948. Price: 2 shillings and sixpence.

The guide is written by J. G. Milne, C. H. V. Sutherland and A. Thompson. In a foreword and introduction, the editor, D. B. Harden, keeper of the department of antiquities, summarizes the history of the Oxford collections from the earliest bequest (1552) to the numerous important accessions of recent years. Superb examples of British coins from various collections show the changing fashions in collecting over those centuries.

Selected coins from the Evans Collection illustrate three periods of Roman history: the civil wars of 68 A.D.; the separatist movements in the provinces in the second half of the third century A.D.; and the Constantinian dynasty. In this section the comment on the times is based on apposite coin legends; and the coins of Carausius, Emperor of Britain (Pl. IV) are noteworthy.

The Greek coins chosen for illustration (Pls. V, VI) come from the Evans collection and (Pl. VII), portraits of the Seleucid Kings, from the Oman collection. The Crondall Hoard, bought as a memorial to Sir Arthur Evans in 1944, consists of gold tremises of the seventh century, pseudo-imperial Merovingian etc. (Pl. VIII). And a recent gift of Captain R. Laird illustrates the history of Chinese money from the Chou dynasty (1122–255 B.C.) to the late nineteenth century.

The guide is admirably designed for use in the museum, yet both text and excellent plates offer much for the interested reader anywhere.

CHESHIRE, CONN. D. H. COX

KINGSHIP AND THE GODS, by *H. Frankfort*, Pp. xxiv+415, Frontispiece and 52 photographic illustrations. Chicago, The University of Chicago Press, 1948. $5.00.

The fundamental difference in viewpoint between the ancient peoples of Egypt and Mesopotamia is clearly established in this important study of the forms of kingship which evolved in the two countries. Underneath resemblances which were due to the similar cultural level attained by the two peoples and their geographical position lay differences which were in part based upon the natural conditions under which each people developed. The regularity with which the annual river flood renewed life in the Nile Valley gave the Egyptian a cheerful assurance of the permanence of established things and an acceptance that life would continue after death which was not shared by his Mesopotamian contemporary who viewed with gloomy anxiety the hostile workings of nature evidenced by harsh climatic changes. In both countries the king was regarded as an intermediary between the people and their gods but, whereas in Mesopotamia the king was only the foremost of men, in Egypt the ruler was in familiar relationship with the gods and the representative on earth of the God Horus, the son of Osiris.

In making clear this important divergence of concept the author has perhaps stressed too much the god-like character of the King in Egypt. Officially he was termed a god but there was no cult of the living king. Actual deification seems to have occurred only after his death. Priestly services of the king were of a funerary character and were established in his mortuary temple. The king was called Horus and the Great God or the Good God. It is more than likely that the Egyptian was capable of viewing his monarch both as a god and as a man at the same time. The author has taken pains to illustrate frequently in the present volume this ability to approach a subject from two widely differing angles, a process which often seems to the modern mind illogical and contradictory.

It seems to the reviewer that Frankfort has understressed the aspect of the ruler as a man in marshalling his evidence to bear upon the king in the guise of a god. Certainly the cynical advice of Amenemhat I to his son is a human document reflecting mortal weariness with life and disillusionment with his fellow men. Similarly it is not the god-like nature of the king that is reflected in the Westcar Papyrus where the magician Zaza-m-ankh suggests to King Sneferu that a group of beautiful girls clad in nets should row upon the palace lake to distract him from his boredom—a boating party which was halted until the lost ornament of one of the rowers had been recovered by the magician's skill. Above all, the Pyramid Texts mirror the concern felt for contriving magical means to achieve the transfiguration of the king into a god after his death. This was not to be accomplished lightly as the elaboration of the spells indicates.

The above statements should already suggest the stimulating nature of this inquiry into the character of the institutions and religions of the ancient Near East. In developing his material Frankfort has frequently clashed with theories put forward particularly by the German scholars Sethe, Kees, Scharff and Junker. Sethe's ingenious reconstruction of the historical background of Predynastic Egypt in his *Urgeschichte* has recently undergone considerable attack and criticism, especially by Kees in regard to the prehistoric kingdom of Heliopolis. On the other hand Scharff has been developing Sethe's idea of the importance of an early culture in the Delta, in which he is to a great extent supported by Junker. These various theories of the growth of political structures, however they may disagree with one another, are all based on the principle that in later religious writings, particularly the Pyramid Texts, the preponderance of a god within a district, his replacement by another god originally at home elsewhere, or the spread throughout a wider area of the worship of a local deity, actually represent the political supremacy of the tribe or clan which worshipped that god. Frankfort considers this system of reasoning to have been overworked in that it misuses beliefs of a purely religious nature which need have no political implications. Such an objection is useful as a counterweight but need not mean that all such reasoning must be dropped.

The importance of an early culture in the Delta has been assumed in spite of the absence of any material evidence. It would seem, however, that Frankfort goes too far in the opposite direction by denying the existence of political organization in the Delta before the time of Menes, although he would be supported in this by Elise Baumgartel's recent work *The Cultures of Predynastic Egypt*. It would seem that there must have been some sort of kingdom or federation of states in the delta to be conquered by Menes or the early kings of Upper Egypt whom he represented in somewhat legendary fashion to the minds of later Egyptians. There is so much emphasis upon the two regions of Upper and Lower Egypt which were brought together by the unification of the country that it is hard to accept Frankfort's suggestion that Menes, motivated by a dualistic conception instinctive to an Egyptian, invented a series of administrative and religious forms for Lower Egypt to parallel those already in existence in Upper Egypt.

While it does seem improbable that there was a prehistoric kingdom of Heliopolis such as that suggested by Sethe, there is an equal lack of material evidence for the Upper Egyptian origin predicated by Frankfort for other elements such as the cult of Osiris. The name of Osiris is not known before the middle of Dynasty V, while in the Old Kingdom his association with Abydos is not mentioned except for a few instances in the Pyramid Texts. He first appears in Dynasty V as Lord of Djedu, that is the Delta town of Busiris. While Osiris did assume the properties of Khenti-imentiu, the ancient god of the dead at Abydos, it is still not clear when he first became associated with the Thinite necropolis. Frankfort ignores a recent proposal that the kings of the First Dynasty were buried at Saqqarah and that Abydos contained only their cenotaphs. This seems at present much the safest course since the balance of probability still lies in favor of Abydos as an Early Dynastic royal cemetery.

One of the difficulties inherent in the method of Sethe's *Urgeschichte* is the necessity to argue that the language of later texts is of such an archaic form that the events reflected by them must revert to much earlier times. He would carry back to prehistoric times much of the subject matter of texts which first appear on the walls of the burial chambers of the king's pyramid at the end of Dynasty V, whereas Kees would place the composition of these texts within a period from the Third to the Fifth Dynasties. Frankfort has taken as the basic material from which he develops his whole theory of kingship in Egypt a text which in its present form dates from the VIIIth century B.C. This text, embodying the so-called "Memphite Theology," was inscribed upon a stela at the orders of the Ethiopian King Shabaka who says that this book, which had been eaten by worms, was a work of the ancestors. It has long been assumed that the language of this text is very old, but disagreement has arisen as to whether it dates from the First Dynasty (Sethe) or from the Old Kingdom (Junker). Considering the vast interval between the reign of Menes (3000 B.C. or before), when Frankfort assumes the text was originally composed, and the time of Shabaka in the VIIIth century B.C., it seems a little rash to lay too much stress on the evidence which it is supposed to give for institutions existing under the

first years of the United Monarchy, particularly in such a case as the Osiris cult for which there is as yet no other evidence.

After discussing the founding of kingship in Egypt, the author turns in the second section of the book to the functioning of kingship. In treating the subject of the potency inherent in the king he has given us one of the most illuminating interpretations that have yet appeared of those three mysterious elements the *Ka* or vital force, the *Ba* (spirit) and the *Akh* (transfigured spirit). Equally instructive is his description of the development of incidents in the celebration of the Sed festival. The significance of this festival is summed up on p. 79 in the following paragraph where the author neatly deals with the problem of the frequency of its occurrence:

> The Sed festival is usually called a jubilee, but it was not a mere commemoration of the king's accession. It was a true renewal of kingly potency, a rejuvination of rulership *ex opere operato*. Sometimes it was celebrated thirty years after the accession but several rulers celebrated it repeatedly and at shorter intervals. It is unlikely that a mere counting of years was a decisive factor, but we do not know on what grounds it was decided that the king's power ought to be renewed.

Part III, "The Passing of Kingship" describes the ceremonies concerned with the royal succession, the funeral rites of the dead ruler and the coronation of his successor. Part IV is devoted to "Kingship and the Divine Powers of Nature." This is divided into three sections. The first is concerned with the king as the image of Re, the creative force embodied in the sun. Next is discussed the association with the king of symbols deriving from the power that was felt to exist in cattle and which represented procreative forces. Finally it is shown how the king as the son of Osiris was connected with the power which lay in the earth and how he therefore embodied the hope of resurrection.

The shorter second part of the book deals with Mesopotamia and the contrast which the institutions of that country present in comparison with Egypt. Frankfort has established early in his text that the king in Mesopotamia was not closely associated with the gods, except in certain special isolated instances, but could act only as a humble mediator for his people with these divine beings. Kingship, the unity of a large country and the continuity of institutions were regarded in Mesopotamia more as ideals to be striven for than as things established which might be subject to infrequent interruption as in Egypt. Frankfort would have kingship arise from a kind of primitive democracy in the city states between the Tigris and the Euphrates. In his intercession with the divine powers of nature the king appears to have felt himself upon a very unsure footing. The texts quoted strikingly illustrate his extreme anxiety in attempting to interpret rightly the will of the gods. The contrast with Egypt felt here is even more evident in the celebration of the festival of the New Year which expresses fear lest the plant life which has disappeared in the scorching heat of summer may not again be revived by the winter rains.

In general this volume forms an admirable pendant to *The Intellectual Adventure of Ancient Man*, another work by members of the Oriental Institute of the University of Chicago devoted to the interpretation of the ideas of the ancient world. It is beautifully and lucidly written and imaginatively illustrated by excellent photographic plates. Although in attempting to explain the mental outlook of peoples so remote from our own times points inevitably arise which are open to disagreement, the student should be grateful for such an excellent guide to the understanding of difficult material much of which is buried in scattered studies of a highly technical nature, frequently in a foreign language. The skillful treatment of such a complex subject is all the more to be admired for its simple clarity of expression.

Museum of Fine Arts, Boston — William Stevenson Smith

The Human Figure, by *Elsie Christie Kielland*. Pp. 33, figs. 10, pls. 4. Aschehoug, Oslo, Norway, 1947.

Those who dabble in Cabala, Babylonian numbers, or Pythagorean extravaganzas will find this little book most welcome. Actually it is an excerpt from a larger work not yet published which the author presented as a lecture before the Art History Society in Oslo in December 1946. It is her aim to trace the development of the method of representing the human figure in Egyptian and Greek reliefs and paintings. Elaborating on the law of frontality as expressed by Julius Lange in 1892 in his *Billedkunstens Fremstilling af Menneskeskikkelsen in den aeldste Periode*, as revised by Heinrich Schäfer in 1930 in his *Von aegyptischer Kunst*, who in turn based his theories on the work of E. Löwy dated 1900 in his *Die Naturwiedergabe in der älteren griechischen Kunst*, the author discovers the existence of the third axis in addition to the two already known to her predecessors, a mysterious axis which only the Greeks after the year 500 B.C. knew fully how to exploit when "inter alia their naturalistic three-dimensional figure appeared for the first time."

Her method is expressed in theorems and axioms of plane geometry. Using compass, square, and triangle, the author erects a maze of constructions such as one finds in a high school plane geometry textbook over some photographs of the grave stele of King Zet in the Louvre, one of the wooden panel reliefs from the tomb of Hesi-re in Cairo, the stele of Staphylos and Athene in Copenhagen, and a detail from a large Delo-

Melian amphora of unstated provenance taken from Pfuhl's *Malerei und Zeichnungen der Griechen*.

Had the author made the distinction between *conceptual* and *optical* "perspective," that is between the psychological and visual factors involved in translating three-dimensional nature into two-dimensional drawing, her work would not have taken the fantastic turn it does. It is the suggestion of this reviewer that before she proceed with her work on the larger and as yet unpublished book she bring her bibliography a little more up to date, and before making any further investigations into the plane geometry of the human figure she look at Richter's book *Greek Painting: The Development of Pictorial Representation from Archaic to Graeco-Roman Times*, also by the same author "Perspective, Ancient, Medieval and Renaissance" in *Scritti in Onore di Bartolome Nogara*, and perhaps even the opening chapters of Bunim's *Space in Medieval Painting*.

DUKE UNIVERSITY SIDNEY D. MARKMAN

THE ALPHABET, A KEY TO THE HISTORY OF MANKIND, by *David Diringer*. Pp. xii+607, figs. 256. The Philosophical Library, New York, 1948. $12.

The title of this work implies that it deals with the alphabet; the sub-title that its connection with the history of man will be stressed; the jacket tells us it is "put forward as one of the most important works of real scholarship in this century"; and the *Table of Contents* suggests that it may be useful as a source of information about all types of writing, alphabetic and non-alphabetic. This multiplicity of what are at times mutually contradictory purposes, is one of the book's chief faults.

Throughout the work, whenever it is a question of satisfying the general reader or the scholar, the former is considered. The statement in the *Preface* (pp. 15–16) may be taken as a warning: "The student . . . who may use the book as an approach to individual scripts and alphabets, will undoubtedly find in the bibliographies a valuable aid to further study." These bibliographies are not, however, at least for the scripts the reviewer knows, either complete or select. The latest works on a subject are often omitted.

The title of Diringer's book, "The Alphabet" is a complete misnomer. "Scripts of the World, Ancient and Modern" would be a much better description. The book does list all extant systems of writing, and discusses each, in greater or less detail. The fact that it is the only recent work of its type in English is again, very useful to the general reader, though quite immaterial to the scholar. A book on the alphabet should, however, do one of two things: it should discuss the origin of the alphabet, or present various types of writing in such a way that the distinction between alphabetic and non-alphabetic writing is clear. This book does neither of these things adequately. The pages (195–216) devoted to various theories about the origin of the alphabet are far too brief and superficial, and are presented with unscholarly bias. He says (p. 217) "But only the Syro-Palestinian Semites produced a genius who created alphabetic writing, from which have descended all past and present alphabets." Three great systems of writing existed in the immediate vicinity (geographical and chronological) of the earliest alphabetic writing: the cuneiform scripts of the Near East, the Egyptian, and the Cretan. The question of the origin of the alphabet is intimately related to all three, and no one should express an opinion on the subject, unless he knows all three thoroughly.

It is quite possible to produce a very useful book on the alphabet without considering its origin; indeed, in the present stage of our knowledge, such an approach is extremely advisable. Work of this nature should, as Diringer's does, present all extant systems of writing, and include, as this does, a mention of other types of communication, like knotted strings (e.g. the Peruvian *quipus*) and marked sticks. Its usefulness would depend, however, on a clearly defined classification, either chronological, geographical, or according to the types of writing. All still undeciphered scripts would have to be considered separately, unless the type of writing is known, even if the exact value of the signs is not clear. The number of undeciphered scripts is still very great.

Such a work needs chronological tables and maps, and clear definitions of the various types of writing. Diringer's work has no such tables, and no maps, and does not follow his own division into alphabetic and non-alphabetic scripts. In the midst of the alphabetic scripts we find a discussion of the Sanskrit syllabary, described correctly; of the Carian script, still undeciphered, and of other non-alphabetic scripts derived from the alphabet. Yet American Indian syllabaries, like the Cherokee and Cree, and African syllabaries, like the Vai, are discussed among non-alphabetic systems, although it is probable that they were invented by people whose only other contact with writing was the alphabet.

These inventions are extraordinarily interesting from a philosophic viewpoint. They prove that syllabaries have advantages over alphabets for certain types of language. Such a presentation would, however, conflict with Diringer's expressed opinion that an alphabet is superior to every other kind of writing. The failure to point out any but the most obvious philosophic implications is disappointing in a book whose subtitle is "A Key to the History of Mankind."

There are a few amusing errors. The caption to fig. 5 (p. 25) reads: "Conventionalized figures of men and animals . . . from the U.S.A., especially California

. . . , Arizona . . . , and Bahamas . . . " (the last our forty-ninth State?). It is very much to the author's credit that such errors are rare, when we consider the enormous amount of material contained in the book.

This review is adverse because it is the reviewer's opinion that a work should be judged in the light of its purpose or purposes. Diringer fails, actually, in the complete achievement of any of his purposes. There is no question but that he could have achieved most of them, and brilliantly, had he confined himself to fewer. It contains a great deal of useful and thought-provoking material. It lacks unified purpose.

BROOKLYN COLLEGE ALICE E. KOBER

MEGIDDO II: SEASONS OF 1935–39 (Oriental Institute Publications, Vol. LXII), by the Megiddo Expedition (*Gordon Loud*, Field Director). TEXT, pp. xxi+199, figs. 416; PLATES, pp. x+2, and 290 plates with opposite text or drawings. University of Chicago Press, Chicago, 1948. $30.00.

A decade ago appeared two massive volumes which described the principal results of the excavations of the Oriental Institute at the great site of Megiddo near Haifa in northern Palestine; *Megiddo Tombs* appeared in 1938 and *Megiddo I* came out in 1939 (cf. *AJA*, xliv, pp. 546–550). The results of the four campaigns from 1935–1939 were ready for publication in 1942, when Gordon Loud's preface is dated, and the volumes have been in proof for several years. The excavators had hoped to dig for one more campaign on this rich site in order to examine the early strata over more than twice the area which has been already dug. Another campaign would probably have stabilized the ceramic chronology of the lower levels, which is still rather fluid, as we shall see.

The completion of the Megiddo publication means that nearly all of the principal American excavations in Palestine have been fully published. Of the major excavations only Beth-shan remains incomplete, while among smaller undertakings only Bethel and the Byzantine sites of the Negeb, as well as some minor undertakings, are still not published. The reviewer hopes to complete the Bethel volume soon, having held it up largely in order to utilize the results of the work at Tell en-Naṣbeh, only four miles away (published last year).

The explanatory text is very terse and often not very informative, but there is a wealth of good photographs and drawings. The editor apologizes in his preface for the absence of any systematic treatment of the finds, pointing out that the members of the staff were drawn one by one into the war effort and were thus not able to prepare their material. However, the pottery of these four campaigns had already been published in large part by Geoffrey Shipton in 1939 (cf. *AJA*, xliv, pp. 546 ff.) and the succinct catalogue form in which the finds are published has its own advantages, especially when the explanatory text on the page opposite each plate is as detailed as it often is. One feature for which the preface apologizes is no loss, in the reviewer's opinion: the crowding of text, photographs and other material, which was too lavishly distributed in the earlier volumes. Thanks to this wartime economy of form the price is lower than it would otherwise have to be. One welcomes enthusiastically the addition of levels in the plans, since their omission in *Megiddo I*, while certainly making for elegance, hampered the archaeologist's analysis very seriously.

Since my review of Shipton's treatment of the early pottery nearly a decade ago (see above) there has been much publication of previously excavated material, some excavation in Palestine and Egypt, and general clarification of the early chronology of Western Asia. I shall therefore survey the early strata *seriatim*, with brief remarks on the chronology. Those who are interested in an up-to-date, but broader survey of the results may be referred to my forthcoming Pelican *Archaeology of Palestine*. In dealing with the pottery of the levels below Stratum VIII at Megiddo it must be remembered that the first attempt to distinguish the pottery remains of contiguous strata cleared over restricted areas is generally subject to correction. For example, in our publication of the results of our work in an area of stratification from Early and Middle Bronze at Tell Beit Mirsim in 1930 there was much more overlapping and erroneous attribution than in our excavation of a much more extensive area in 1932. If the excavators of Megiddo had been able to undertake another campaign, as had been contemplated, we may be sure that the results would have been more satisfactory.

The chronology of Strata XX and XIX is still obscure, in spite of the new data contained in the present volumes, including the welcome report on the flint culture by Miss Joan Crowfoot (pp. 141–44), who had previously studied the flints from the early strata of Jericho. However, with full publication of the material we can see more clearly than before. Stratum −XX (cave 4067) contained no pottery, but its flint culture is both distinctive and homogeneous, a fact which gives it great stratigraphical value; it corresponds to the so-called Jerichoan of Jericho VIII, which was also published by Miss Crowfoot. I do not believe, however, that any conclusions can be drawn from the lack of pottery in this cave, which may mean only that the squatters in the cave were semi-nomadic, not sedentary folk. The level below Jericho VIII, Jericho IX, shares with still earlier levels an identical flint culture of Tahunian II character, which is unquestionably older than Megiddo −XX. But in view of the fact that Jericho IX already possessed a well-developed neolithic pottery, Megiddo −XX must be much later

than the introduction of the ceramic art into Palestine, since it shares its flint culture with XX.

The chief problem in connection with the relative chronology of Megiddo XX is whether it preceded or followed the Ghassulian (i.e., Ghassûl IV A–B, since practically nothing is yet known of the lower strata except their existence, and what little has been published is not Ghassulian *sensu stricto*). The Ghassulian "cornets" of XX, which are smaller and finer in texture than most of the specimens of this class from Ghassûl IV but have some exact analogues in the latter (according to Shipton's autopsy), make it clear, at all events, that Megiddo XX either followed or preceded Ghassûl IV without any real gap between the cultures. I formerly held, with Wright and others, that Jericho VIII and its congeners followed Ghassûl, but Mrs. Braidwood convinced me in 1946 that this view is erroneous and that the flint culture of the Jerichoan (described precisely, with full illustration, by Joan Crowfoot in *LAAA*, 1937, pp. 35–51) antedates the Ghassulian. This means also that R. de Vaux's "Énéolithique Moyen," the oldest stratum on Tell el-Far'ah in north-central Palestine (*Revue Biblique*, 1947, pp. 397 ff.), *antedates* the Ghassulian and is separated from the following stratum by a considerable gap which included Ghassulian. Among the characteristic flint and pottery types which help to demonstrate this chronological order are the following. First we may list the characteristic Tahunian (neolithic) sickle-edge of Wâdi Tahûneh with deep denticulation (having an average of 2½–3 teeth to a centimeter), which is typically neolithic in the Near East, and which no longer occurs in Ghassulian and posterior deposits (except intrusively). Second may be mentioned the use of flint arrowheads of the latest type used in Palestine. Flint arrowheads disappeared before Ghassul IV, as we know from the thorough work in its two levels by Mahan and Murphy, and were exceedingly rare in later Palestine, though they survived into dynastic times in Upper Egypt. Yet they turn up commonly in Jericho VIII; they appear also in the lowest level at Tell el-Far'ah in the north as well as at Maghâret Abu Uṣba' on the coast. Turning to pottery we may cite in particular the appearance of very characteristic herring-bone notching in Jericho VIII and Megiddo XX, as well as at Abu Uṣba', in the lowest stratum of Tell el-Far'ah and the lower strata (II and III) of Ghassul itself (but never in true Ghassulian, i.e., Ghassul IV); cf. *BASOR*, 89, p. 25). This is only one of many items which might be cited, and which together with the decisive evidence from flints seem to leave no doubt as to relative priority. On the other hand, I cannot see any clear indications that Beth-shan XVIII (and −XVIII) belong in this picture; its peculiar broad loop handles do not appear in Jerichoan context anywhere, so far as I can see, and other evidence seems to concur in this negative conclusion.

In favor of the view that Jerichoan preceded Ghassulian is also the fact that Sukenik discovered a Ghassulian stratum immediately below the Esdraelon culture at 'Affûleh (*QDAP*, VIII, 1938, p. 157). I should be inclined to put Beth-shan XVIII between these two levels at 'Affuleh, since its flint and pottery both agree nicely with such an attribution. In any event, there seems virtually no doubt left that, contrary to my former opinion, the oldest levels at Megiddo and Tell el-Far'ah antedate Ghassûl IV. A sounding to virgin soil at Teleilat el-Ghassûl itself is needed to decide this question once for all.

Both Stratum XX and the following XIX are badly mixed, XX showing some sherds from Chalcolithic and Early Bronze I, while XIX contains sherds from XX as well as from XVIII. One may safely expect further excavations to nuance the picture considerably and perhaps to bring subdivision or multiplication of strata. The evidence is ambiguous; e.g., the fragments of gray-burnished bowls (typical of the Esdraelon culture) shown on Pl. 3: 4–5 are said to have been found under the pavement of a XIX locus, while the grain-slip sherds in Pl. 99: 5, 7–13 all come from a single locus without walls or floor (i.e., from débris). Such as it is, however, it suggests that two phases are reflected in XIX, an Esdraelon phase (cir. 3300–3100 B.C.) and an Early Bronze I phase, immediately following and probably overlapping. The view sometimes expressed that gray-burnished ware and grain-slip ware were contemporary, which seemed to be imposed by the unfortunate method of publication used in Engberg and Shipton's *Notes on the Chalcolithic and Early Bronze Age Pottery of Megiddo*, has been disproved by the excavations at 'Affuleh, Tell el-Far'ah and Khirbet Kerak. In the 1946 work at Tell el-Far'ah only a few (perhaps intrusive) sherds of grain slip are reported from the "Énéolithique Supérieure," whereas in the 1947 campaign rich Esdraelon deposits, especially in tombs, were found (*Comptes Rendus de l'Académie des Inscriptions*, 1947, pp. 684 ff.). Of course, there may well have been a considerable amount of overlapping, but the main point is settled: the Esdraelon phase, with its gray-burnished pottery, preceded Early Bronze I, with its grain-slip.

In Stratum XVIII we find scarcely anything but potsherds, but these are overwhelmingly characteristic of Early Bronze II (cir. 2900–2600, according to my minimal Egyptian chronology; if the current Oriental Institute chronology, dating Menes about 3100 B.C., is accepted, this dating must be raised some two centuries). Shipton's date between 3000 and 2500 is correct, though too liberal in its implied allowance of time. There is only one specimen (in XVII) of the beautiful lustrous Khirbet Kerak ware published (Pl. 107: 27), so our stratum came to an end before the

floruit of this popular ware, say about the twenty-seventh century.

Strata XVII–XVI are really two successive phases of building in a single stratum, so the pottery seems to belong together. Again it is mixed, with some material obviously coming from XVIII or XV. As a whole these two strata may safely be referred to Early Bronze III, but the almost complete absence of Khirbet-Kerak ware suggests a date toward the end of the period. It seems clear that XVI came to an end not later than the twenty-fourth century B.C. leaving a gap of several centuries between it and XV. The four cooking pots of characteristically Middle Bronze I type from XVI (Pl. 7: 9–12) all came from a single locus (4023), to which nothing else in these strata is attributed. This locus lies at the SW corner of N 14, in an area of débris beside a massive wall of Stratum XV whose foundations went down more than two meters (to 156.30) below a possible near-by occupation level in XVI (158.50). Under the circumstances a date in XV for these cooking pots is almost as unavoidable stratigraphically as it is certain typologically (they are identical with cooking pots of Strata I-H at Tell Beit Mirsim). Shipton's date for the end of XVI (cir. 1950 B.C.) is in any case several centuries too low.

There is no obscurity about the chronology of the following strata (XV–V), which extend from before the nineteenth to the early tenth century B.C. Here the chronology agrees so closely with that of Tell Beit Mirsim, some eighty miles further south, that all earlier objections to the reviewer's chronology of the latter site have evaporated; for some details see *AJA*, 1940, pp. 547 f. The synchronic table in the *Text*, p. 5, provides the chronological framework, which remains unaltered. Of course, there is some mixture of pottery—unavoidable under the circumstances,—and the dates given by Shipton are too stereotyped, but they are probably nowhere over half a century wrong. The basis is naturally Egyptian and not Mesopotamian, since our Egyptian dates are fixed back to about 2000 B.C. within a decade or two at most.

The two volumes contain a wealth of archaeological material besides pottery. In particular there is a great deal of new light on the history of masonry and temple plans. Among the most interesting items of architectural interest are the sanctuary of XIX, which bears a striking resemblance to the Ai temple and suggests that the latter may have been built centuries before the time of its destruction (not after the twenty-third century B.C.), and the archaic city wall of XVIII. There is the great altar of XVII, which continued to be venerated, it would appear, for many centuries. Then there are splendid gateways, including the unique gate of XIII from the seventeenth century, and the sixteenth-century gateway, which continued in use from Stratum X to VII, more than four hundred years. Here again is the first publication in full of the splendid Solomonic gateway of Stratum IV-B, built in the tenth century and providing our closest parallel to Ezekiel's reconstruction of the gates of the Temple enclosure as he remembered them some three and a half centuries after they were first built. Innumerable objects, like the cultic group from about 1000 B.C. (*Text*, p. 44), add to the archaeologist's store of data; the most remarkable of all, the ivories from Stratum VII, have already been luxuriously published in *Megiddo Ivories* (1939).

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Les Fouilles de Pazarli enterprises par la Société d'Histoire Turque, by Dr. *Hamit Zübeyr Koşay*. Türk Tarih Kurumu, Yayinlarindan, V. Seri, No. 4. Pp. 21, pls. lx. Ankara, 1941.

Pazarlı is a village north of Bogazköy and north-east of the Hüyük of Alaca, in that central region of Anatolia better known for its contributions to the history of early rather than of classical times. Nevertheless, in 1937, the report of Phrygian remains coming to the surface there led to two brief excavations in that and the following year, the extraordinary finds of which, especially the pottery and the terra cottas, are published in this slim volume in Turkish and French.

So through the activities of the admirable Turkish Historical Society, little by little Asia Minor yields its secrets, and we may hope that one day it will no longer be the blank area between Syria-Mesopotamia and the Aegean. We still do not know whether it was the Phrygians, or another people, whom the Assyrians of the eleventh century met in those called Mouski. We still cannot say when or how the Phrygians came into Asia Minor—though it is reasonable to assume that finds in Thrace will establish that as their corridor from the Lausitz areas to the north. But we can now tell what the Phrygians looked like in the ninth and the eighth centuries, how they lived, and what were their cultural contacts. We may even form an idea of their social and governmental structure.

Phrygian Pazarlı was a hill fortress, built over settlements going back to chalcolithic times. It is precisely the sort of stronghold occupied by the chiefs of invading tribes. Of a size comparable to the Mycenaean fortresses of Mycenae and Tiryns, it offered shelter to the chieftain and his retainers, with room for sufficient provisions in bins and on the hoof to last out any reasonable siege. In a state composed of residents of such keeps, the central authority must always have been weak, as it was in late Mycenaean times. The Phrygian state, then, seems to have had that feudal, tribal, character which we associate with the 'Indo-European' invaders into the Mediterranean world.

Architecturally, the Phrygians built small, in-

dividual, two-storey houses, like neither the megaron nor the Middle East palace. These houses generally stood free, and did not employ the Mediterranean party-wall technique. The more pretentious structures were faced with glazed relief tiles in color, showing geometric designs, heraldic groups of animals, and frieze-like processions of animals and of soldiers. The roofs were covered with flat and rounded tiles in the Greek manner, laid on wooden beams and rafters, with antefixes but no akroteria. Structural materials included cut and uncut stone as well as mud brick, with a liberal use of wooden beams.

A similar mixture of apparently inherited and of borrowed elements appears also in the pottery and the painting. In dress, armament, and artistic rendering the Phrygian warriors are indistinguishable from those of Carchemish, of Lycia, and of Mycenae, with their plumed helmets, round shields, bare or gartered thighs, greaves, long spears, and their penchant for walking in long rows, each with his further leg advanced. They were fond of sphynxes, griffons, centaurs, lions and bulls, and of horned animals rearing on either side of a sacred tree. They buried their dead in extended position in individual graves. Their pottery was painted in brown or pink or red over a white slip, with geometrical designs predominating. One pitcher-top shows circular designs in polychromy, below a solid colored neck, spout, and handle. One fragmentary pot shows what may be two female dancers, one of whom brandishes a rhyton.

Unfortunately, there seems to be at present very few criteria for dating this material, and precise conclusions of artistic or historical nature are impossible. Nevertheless, these were certainly not 'Dark Ages' in Anatolia. Now that the existence of such material has been demonstrated, it is natural to think that more discoveries will be made, which will help to clear up that even more obscure problem, the influences bearing on Greek recovery in the ninth and eighth centuries.

YALE UNIVERSITY C. BRADFORD WELLES

FOUNDATIONS IN THE DUST, A Story of Mesopotamian Exploration, by *Seton Lloyd*. Pp. xii+237, illustrations 8, map. Oxford University Press, 1947.

The subject of this book was suggested to the author early in 1945 by the centenary of the commencement of Sir Henry Layard's excavations in Assyria. "The occasion seemed a suitable one for attempting to knit together the lives and work of the great pioneer Assyriologists into a single narrative, which could afterwards be extended to cover the work of their more recent successors, and so present the whole of Mesopotamian research as a single epic." The idea was a happy one and the result is a fascinating and altogether delightful book. The story begins in the eighteenth century "with Mesopotamia's great heritage of antiquities still safely bosomed in her mounds," and ends with a brief account of almost contemporary excavations.

The bulk of the volume is devoted to the nineteenth century period of feverish digging for the fabulous Assyrian treasures that so caught the imaginations of our grandfathers,—the same period in which gradually and quietly, but with equally astounding results, such brilliant pioneering advances were made in the study of cuneiform writing and in the science of Assyriology. The careers of the principal actors in these two dramas are related with plentiful quotation from their own works and are expertly interwoven to make an integrated story of Mesopotamian archaeological discovery. We meet the remarkable scholar Claudius Rich and his admirable wife Mary; the great Henry Rawlinson, scaling the Behistun Rock and at work in his study on the Tigris at Baghdad; the adventurous traveller James Buckingham; Ker Porter, Baillie-Fraser, Taylor, Ainsworth of the ill-fated "Euphrates Expedition," Botta, Flandin, Coste, the indefatigable Sir Henry Layard, his somewhat egregious follower Rassam, and many lesser lights. The great cities of Nimrud, Khorsabad, Kuyunjik and all the others rise from the dust about the feet of these men of imagination. If Lloyd gives more attention to the activities of British explorers than to those of other nationalities, it is, as Sir Leonard Woolley says in his introduction, "by no means an accident and no unfair emphasis that he stresses the part Great Britain has played in giving to a nation politically young the historic consciousness which is the surest foundation of sane nationalism."

In due course the Germans and the Americans appear on the scene, and the titles of the concluding chapters of the book, following the "scramble for antiquities" are suggestive of the later trend in Mesopotamian archaeology (and archaeology in general):—the "Birth of a Conscience" and "Ethics and Method" bring the tale down through the end of the nineteenth century and the beginning of the twentieth to the still fresh discoveries of pre-Sumerian remains, undreamed of by the Assyriologists of a generation ago, of Ur, Gawra, Warka, Halaf and the incredible Hassunah. The epilogue closes with a fitting tribute to Gertrude Bell, "to whose clear vision the tradition of Mesopotamian research owes its perpetuation in a new form."

Ulrica Lloyd's six delightful drawings, after contemporary portraits and illustrations, contribute still further to the charm of the book, and a bibliography and map of ancient sites add to its usefulness.[1]

AMERICAN NUMISMATIC SOCIETY, NEW YORK GEORGE C. MILES

TWIN RIVERS, A brief history of Iraq from the earliest times to the present day, by *Seton Lloyd*. Pp. viii, 244, plates, maps, charts. Oxford University Press, 1947 (2nd ed.).

This volume, reprinted from the first edition of 1943, is a model of conscientious and scholarly popularization. Not only the general reader but the specialist is in Mr. Lloyd's debt, for the former will find within these covers a reliable and readable introduction to the archaeology and history of a vitally important land throughout its six thousand years, or more, of cultural occupation; and the latter, whatever his particular field, must welcome both the comprehensive view of the "stream of history" which Mr. Lloyd has achieved – a view often denied the specialist by his very concern with a limited field – and the very up-to-date account of Mesopotamian origins on the one hand and of recent and contemporary Iraqi history on the other.

As the author points out, the scope of his undertaking is a gigantic one with which no single writer could hope to deal competently at first hand, and readers will surely condone, as he begs them to, the liberal quotations and paraphrases from numerous standard works. In fact, many of the quoted passages are a pleasant complement to Mr. Lloyd's own genial style and the result is an entertaining account in which, to this reader, at least, interest never lags. For example, in the Roman and Byzantine phases, Gibbon is laid under heavy contribution, with judicious skill and to striking advantage, for the great historian's colorful prose, quoted in reasonable amounts, casts many great personalities and events in vivid relief.

A "Prelude among the Potsherds" summarizes the archaeology of Mesopotamia from the Neolithic age down through the Tell Halaf, al-Ubaid, Uruk and Jemdet Nasr cultures to the early dynastic period. Here of course Mr. Lloyd speaks as an authority, and the inclusion of results of excavations as late as 1943 makes this comprehensive chapter a valuable one to the post-war reader who has in the last few years lost touch with recent progress in the history of prehistory. Graphic end-paper charts plot the occurrence of the several pottery cultures at the various sites. There follow chapters on Sumer and Akkad, Babylon and Assyria, the Achaemenians, Alexander and the Seleucids, the Parthians, Sassanians and Arabs; and the two final sections are devoted to the Mongols, Persians and Turks, and to the Arabs of the 20th century. These latter pages are especially helpful, for the history of Ottoman rule in Iraq and, to a lesser extent, of the beginnings of the "Arab awakening" have not, heretofore, been readily available to the general reader.

A few words of criticism. The printing and binding, done in India for the very good reason that the book might appear when it did to be of use to British and other troops in Iraq during the war, do not do credit to the text. The typography of some of the maps is too small for ready legibility. There are minor typographical errors on pages 110, 120, 142, 146, 162, 179, 182, 205 and 216. Samarra was not abandoned after 56 years; the mint there was active for more than 100 years. The last Ilkhanid was not the first of the Mongols to embrace Islam (p. 182). The scene depicting "Rhases" in his laboratory is a French figment, and is, of course, not authentic, whereas the rest of the illustrations are. But these are petty matters, and to record them is in no way to detract from the merits of this excellent little book.

AMERICAN NUMISMATIC SOCIETY, NEW YORK GEORGE C. MILES

PAROS, by *O. Rubensohn*. Pauly-Wissowa, Real-Encyclopädie der classischen Altertumswissenschaft, Halbband 36, pp. 1781–1872. Alfred Druckenmüller Verlag, Stuttgart-Waldsee, 1947.

This *RE* article by Professor Otto Rubensohn is a notable achievement in itself, and is the more worthy of citation, because the volume of which it is a part will remain for some time little known in this country. It is a full article of the best type, wherein is gathered together what may be known of Paros from antiquity to the present, under the headings of geology, geography, resources and economics, history, public buildings, constitution and administration, religion, art and artists, and notable Parians. The whole is prefaced by the small but useful chart from *IG* xii, 5.

Although the island had other resources – agriculture, shipping, perhaps pottery, and probably timber at an early date – it is the island marble which made its prosperity, from Early Cycladic times, when its bowls and idols had a certain vogue down through Roman times (when Paros never served as a place of exile), to mediaeval and modern times, under Byzantine, Venetian, and even for a few years under Russian rule. Twice it seems to have been abandoned, or occupied by only a few people. This happened, probably for similar reasons, in the sixteenth and the fifteenth centuries B.C. and in the time of the Arab raids in the ninth Christian century. Otherwise the marmor Parium has secured the island prosperity and fame. The Parian sculptors were always busy, supporting a

[1] The author may wish in a future edition to correct the few slips which this reviewer noticed: p. vi, Iran for Iraq; p. 12, Rich's Turkish friend probably said *sizi taniyorum*, not *biliorim;* pp. 77–8, Naqsh-i-Rajah for Rajab; p. 100, Layard would have travelled west, not south, from Isfahan to Shuster and Susa; p. 120, al-Jasirah for al-Jazirah; p. 126, two letters have fallen from the word Yezidis; p. 176, cyliner for cylinder; p. 183, University Museum of Pennsylvania for University Museum, Philadelphia; p. 212, Tell Ajrab for Tell Agrab (or Akrab).

large industry in tomb-stones or undertaking the more ambitious projects of a Ludovisi throne, a Boston relief, or the Siphnian frieze.

Historically the island was prominent, founding Thasos and maintaining active relations with Miletus in archaic times, defending themselves against Miltiades at the beginning of the classical period, and busy with Pythagoreans and with Dionysius of Syracuse in the early fourth century, when the Parians collaborated in the founding of Pharos at the entrance of the Adriatic.

In religion Paros presents a rather primitive or conservative picture, devoting itself primarily to the deities of fertility of land and of animals, who were worshipped typically out-of-doors, and, anticipating the modern Greeks in the location of their churches, on hill-tops.

Throughout, the author takes an independent position in dealing with his subject. One of his most interesting suggestions is that the famous flying Victory of Paros was carved as part of a victory monument in 489, and overthrown by the Athenians ten years later. This brief exposure to the elements accounts for its excellent preservation.

YALE UNIVERSITY C. BRADFORD WELLES

HYAKINTHOS, by *Machteld J. Mellink*. Pp. 184. Utrecht, 1943.

In this book the fundamental outline of Dr. Mellink's reconstruction of the origin and development of the cult of Hyakinthos at Amyklai in Laconia follows the path developed by Nilsson in his *Minoan-Mycenaean Religion and its survival in Greek Religion:* Hyakinthos was in origin a Minoan god whose ritual and mythology centered around the annual death and rebirth of vegetation.

Miss Mellink's exhaustive review of the evidence contains some new suggestions and raises some new problems; in this respect she has made a real contribution toward the advancement of our understanding of the relation between pre-Greek and Greek religion. It is unfortunate her argument is incoherently arranged and her meaning obscured by inadequate mastery of English idiom. The central novelty of her interpretation of the history of the Hyakinthos cult at Amyklai lies in the idea that the superimposition of Apollo made no essential difference to the form of the cult. Whereas Rohde in his *Psyche*, Nilsson in his *Griechische Feste*, and others saw in the ritual of the Hyakinthia elements appropriate both to Apollo and Hyakinthos and dismissed the myth of the death of the young Hyakinthos as a late accretion, Mellink, adducing Oriental analogies, sees the whole as consistent with the cult of a pre-Greek vegetation god in whose mythology death in youth is the central theme. (She here fails to explain the bearded Hyakinthos on Bathykles' altar at Amyklai.) Whereas Rohde saw in the throne and statue of Apollo an innovation imposed on an original simple "grave" of Hyakinthos, Mellink suggests a Minoan-Mycenaean throne and pillar cult combined with the "grave." Drawing here on W. Aly, *Der kretische Apollonkult*, and M. H. Swindler, *Cretan elements in the cults of Apollo*, she argues that Apollo has absorbed elements of the Minoan god of hunting and vegetation. This line of argument commits her to reject the old hypothesis which attributed the introduction of Apollo at Amyklai to the Spartan conquest in the eighth century B.C.; she pushes it back to the eleventh century, to an Achaean upsurge at Amyklai coincident with the first successful resistance of the city against the Dorian invasion.

If, with Mellink, we eradicate all idea that at Amyklai Hyakinthos and Apollo represent opposed religious strata, then the problem is to explain why the cult of Apollo was ever superimposed on the cult of Hyakinthos. This reviewer finds no explanation why the "Achaean upsurge" in the eleventh century B.C. — in itself a very frail hypothesis — expressed itself in the introduction of Apollo rather than in increased emphasis on the original deity, Hyakinthos, a more obvious symbol of local patriotism.

The weakness in the method underlying Mellink's work is characteristic of most other contemporary work in the field. The history of religion is conceived as a blind diffusion and collision of tribal traditions, with little or no regard for the functional interrelationship between religious institutions and the total culture of which they form a part. Mellink here traces a diffusionist chain, to bring the cult of the dying vegetation god from the Orient to Crete; then, reversing the historical tradition, she supposes a colonization from Crete to Laconia to bring the cult to Amyklai. In terms of this method, the primary question with regard to the introduction of Apollo at Amyklai is whether Apollo is a Dorian or an Achaean importation. This reviewer doubts whether this question is very significant. In any case there is still a need for a study of the history of the shrine at Amyklai which would attempt to explore what the cult meant to the devotees, and how, through the catastrophic cultural changes which separate the Mycenaean age from the fifth century, the cult changed in order to remain meaningful.

WESLEYAN UNIVERSITY NORMAN O. BROWN

HERMES THE THIEF: THE EVOLUTION OF A MYTH, by *Norman O. Brown*. Pp. vi+164, pl. 1. The University of Wisconsin Press, 1947. $3.00.

Professor Brown, in his preface, announces his intention of exploring "the hypothesis that the interrelation of Greek mythology and history is much closer

than has generally been recognized," and he undertakes to correlate the changes in the mythology of Hermes "with the revolution in economic techniques, social organization, and modes of thought that took place in Athens between the Homeric age and the fifth century B.C." (p. v). In the first two chapters he investigates tribal myths and tribal customs in an effort to trace Hermes to his origin; he then discusses the changes which the god undergoes in Homer and Hesiod, relating these to the developments in the political and social life of the period; he next presents the *Homeric Hymn to Hermes* as a reflection of the increasing importance of the merchants and artisans in Greek life during the sixth century B.C.; and finally he brings the *Hymn* home to Athens, maintaining that it was composed there during the Peisistratid period about 520 B.C.

At the outset Professor Brown attacks the view that the *Homeric Hymn to Hermes*, with its story of how the infant Hermes stole Apollo's cattle, represents the original core of the mythology of Hermes. Pushing his search for origins back beyond Homer into the age of tribal organization, he comes upon Hermes the Trickster, a fundamental character, of whom Hermes the Thief is a particular aspect; and beyond the Trickster is the Magician, the earliest role of Hermes. From the Magician God is descended Hermes the Craftsman, for in early times the difference between the craftsman's skill and magic was slight.

The author, in a detailed examination of the *Homeric Hymn to Hermes* (it should here be stated that he rejects lines 513–580 as incompatible with the body of the *Hymn*), finds the god there to be an idealized projection into mythology of the Greek merchants and craftsmen of the sixth century B.C. The *Hymn* adds two new themes which radically affect the significance of the myth. The first, the strife between Hermes and Apollo, "translates into mythical language the insurgency of the Greek lower classes and their demands for equality with the artistocracy. The *Hymn* thus reflects the social crisis of the archaic age – "the crisis depicted by Solon . . . and by Theognis . . . " (p. 85). The strife also corresponds to an actual conflict between the cults of the two gods. Hermes is intruding into music and athletics, formerly the exclusive spheres of Apollo. The second new theme in the *Hymn* is Hermes' appearance as a baby; "by this device the poet accentuates the contrast between Power and Helplessness, between the established authority of the aristocracy and the native intelligence of the rising lower classes . . . " (p. 86).

In his last chapter the author locates and dates the composition of the *Hymn*. Basing his argument on the account of Hermes' sacrifice of two of the stolen cattle, he identifies this ritual as the cult of the Twelve Gods in Athens. On the grounds that in Athens, until 514 B.C., this was an altarless cult, as called for by the *Hymn*, and that Hermes became associated with the cult there in 520–514 B.C., Brown places the composition of the *Hymn* in Athens and finds 520 B.C. the earliest possible date. Further, a reference to the close alliance between the Boeotians and the Peisistratids makes the end of this alliance, 519 B.C., the latest date at which the *Hymn* could have been written.

Brown has drawn his material from many disciplines, anthropology, archaeology, history, mythology, philology, and religion. The early chapters, in particular, are done in a masterly manner. In the later chapters, although the interest is sustained and perhaps even greater ingenuity is displayed, the argument is by no means so sound. Granted the author's basic assumption that every detail of the action in the *Hymn* must refer to some specific historical practice or occurrence known to the poet and his audience, still many links are not, perhaps cannot be, proved. There can be no question, however, that the author has powerfully confirmed his initial hypothesis, and the book is of the first importance to any future study of the mythology of Hermes.

There are two appendices, one on *Hermes' Cattle Theft in the Hesiodic "Megalai Eoiai"* and the other on the text of the *Homeric Hymn to Hermes*. Both are valuable; the second proposes some excellent emendations.

INDIANA UNIVERSITY CHARLES H. REEVES

DAS ANTIKE ATHEN IN ZWANZIG FARBAUFNAHMEN, by *Hans A. Bauer*, 20 color plates ($8\frac{1}{4} \times 5\frac{1}{2}$") with accompanying text. Paul Neff Verlag, Wien, 1947.

The photographer who also wrote the text is a professor of physics, the author of a much used handbook on atomic physics. This book is therefore not the work of a professional archaeologist, nor is it addressed to specialists. The main attraction is, of course, the color plates (made from Agfa color negatives), but it should be emphasized that the lengthy captions (each of about 300 words) contain accurate and pertinent information written in excellent taste.

The plates show the West side of the Acropolis at sunset (I and II), the Nike temple as restored in 1940 (III), the East side of the Propylaea (IV), the Parthenon (V, VI, VII), The Erechtheion (VIII and IX), a Corinthian capital (X), The Olympieion (XI and XII), The Arch of Hadrian (XIII), The Roman Agora (XIV) with its gate (XV) and the Tower of the Winds (XVI), The tombstone of Demetria and Pamphile from the Kerameikos (XVII), and three panoramas of Athens as seen from The Acropolis (XVIII) and from The Lykabettos (XIX and XX).

The color plates compare well with the best reproductions found in recent issues of the *National*

Geographic, but their unique value lies in the fact that they may claim to be the first published color plates showing the antiquities of Athens.

PRINCETON UNIVERSITY A. E. RAUBITSCHEK

THE ATTALIDS OF PERGAMON, by *Esther V. Hansen*. Cornell Studies in Classical Philology, vol. xxix. Pp. xxxvi+464. Cornell University Press, Ithaca, New York, 1947. $4.50.

This is really a remarkable book. While it is unlikely that many will read it through, while earlier reviewers have commented that it is rather two books than one, and while much of it is difficult to follow without the plates and plans and maps which would have been helpful, there is no doubt that it marks an epoch in Pergamene studies. Everyone who works in this phase of the Hellenistic World must have it at his elbow.

It is a long book, a painstaking book, and a book stemming from years of devoted study. The author has felt the attraction of Pergamum, that spectacular hill city of the Caicus which has been equally rewarding in finds and in scenery. She has visited Pergamum, as all do who can. She has studied its topography, its buildings, its art, and its views, both on the spot and in literature, ancient and modern. She has followed the history of the dynasty which adopted it as a stronghold and a capital for a century and a half, because they belong, built the buildings, and created the art.

These are the two books, the story of the city, and the story of the dynasty. The first occupies chapters i to v, the latter chapters vii and viii. Other chapters, introductory and supplementary, furnish the physical setting, the Attalid administration, and Pergamene religion and science. All are motivated by the desire to assemble and to present everything which may be known about Pergamum and its kings.

It is this exhaustive quality of the book which at once makes it hard reading and an invaluable aid. It strikes one at once in the eighteen pages of the bibliography, not a list of items useful to the reader, or of titles "frequently-cited," but of everything which has been written on the subject.[1] There may be omissions. Nevertheless, where omissions have been noted, I am inclined to think that they will prove to be in each case references of importance for Hellenistic history, doubtless, but not primarily for Pergamum. It has been remarked that this is not a good account of Hellenistic history. In a way, it is not history at all, nor, for that matter, does the author write as a professed historian. It is antiquarianism in its best and purest form.

The same spirit shows itself in the attitude of the author toward her writing. She purposely keeps herself and her opinions in the background. Where it is complained that she gives faithfully all the opinions of the scholars on a disputed point, without taking sides or proposing a solution of her own, I should say that that represents precisely the spirit of the work. The author has played a large part in things, actually, as one will find who investigates the matter, but more in the way of arrangement and presentation than of gratuitous suggestion. The book has a strongly personal atmosphere, but without the personal appearance of the author as a dea ex machina, arbitrarily regulating things.

And yet she has accomplished very much. For years, the Pergamene kings and their remarkable city have been the orphan children of the Hellenistic World. No systematic account of them has been attempted in over forty years, since Cardinali wrote his *Regno di Pergamo* in 1906. The attitude of historians toward the Attalids has not always been as hostile, for example, as that of Tarn, but it rarely has been friendly. Here perhaps too little partiality has been shown toward the subject. Even if we do not propose to approach history in the manner of a romancer, making heroes and villains, nevertheless impartiality is served by the existence of advocates on both sides.

In the historical chapters, the fullness of treatment is helpful. We have no lack of Hellenistic histories, but we have few of this sort, where everything which is preserved relating to the subject is cited and used. The activities of the Attalid kings can be followed step by step, whether they be conducting a campaign or studying under a philosopher, or enriching their capital with original or looted art. There is a great convenience in all this, because the sources are so various and so scattered. But it is in the hundred and thirty pages devoted to the Attalid building and art, almost a third of the whole, that the book performs its greatest service.

In the days of its discovery, this art was enormously influential in men's minds; but fashions changed. Shockingly few of the titles in the bibliography, in these fields, are later than 1900. Additional excavations in the 'thirties brought additional finds and information, but very little additional study. Even in the currently all-important field of pottery one prints 'Pergamene' in single quotes, not knowing whether it is or not. And the complete picture of the Pergamum of Eumenes and Attalus II had never before been drawn.

[1] Lest I seem entirely remiss in my technical duties as reviewer, I may add one title which was unavailable to Miss Hansen because of the war, Arnold Schobe's useful "Zur Datierung Eumenischer Bauten," in the *Wiener Jahreshefte*, xxxviii (1940), pp. 151–168. Other recent titles are mentioned by Andre Aymard in the REA, xlix, 3/4 (1947), pp. 339–345, and useful general considerations by J. Van A. Fine in *CJ*, xliv, 1 (Oct. 1948) pp. 67–71.

In this field, too, the author writes as the amateur rather than as the archaeologist. Perhaps this is the reason why she is able to carry one's attention on through the monuments of the city without the aid of maps or drawings, in the manner of Pausanias. For the readers of the *Journal*, on the other hand, this may be the most useful, as it is the most pertinent part of the volume. It will be replaced only when we have the special study of Pergamene art which the material justifies.

So we have only to applaud, and to praise Miss Hansen for a notable achievement in the Hellenistic field, all the more notable because it is accomplished without specialized training as historian, or archaeologist, or epigrapher. Thanks are due also to the Cornell University Press for undertaking so large a project in the present difficult times. But the existence of so much makes one nevertheless wish for more. Is it impossible, after all, to publish that second volume of plates, which would really add immeasurably to the utility of *The Attalids of Pergamon*?

YALE UNIVERSITY C. BRADFORD WELLES

LARISA AM HERMOS III. Die Kleinfunde. By *Johannes Boehlau* and *Karl Schefold*, with the cooperation of J. F. Crome, E. Gren, L. Kjellberg and B. Meyer-Plath. Pp. 199, figs. 89, pls. 62. Berlin, W. de Gruyter, 1942.

So many excavations of Archaic sites in Western Asia Minor have been dogged by misfortune that the publication of Larisa on the Hermus must be greeted with rejoicing. Even here, however, joy mingles with regret: as a result of the war the book under review has become a bibliographic rarity.

The Swedish-German excavations of the acropolis of Larisa extended over several decades (1902–1934). The present volume, although based on Boehlau's and Crome's work, is substantially the achievement of Schefold. Only a small fraction of the sherds found is reproduced in the present volume. A detailed catalogue was compiled by Boehlau, but it was not considered feasible to publish what must have been a very monumental opus. The present selection is adequate and well illustrated—there are some three-hundred and eighty profile drawings as well as photographs of almost eight-hundred vases and sherds.

Stratigraphic evidence is neither abundant nor clearly stated. Apparently, the major guideposts are the Greek conquest about 700 B.C., the destruction by the Athenians in 425/4 B.C., and that by the Gauls ca. 280 B.C. We also read of a cistern closed in 450 B.C., of two or three datable tombs, and of some houses erected after 280 B.C. Provenance and dimensions of objects are given only in exceptional cases, but the plates have indications of scale. No attempt is made to provide systematic descriptions of the individual pieces.

Since the book may remain unavailable to most readers of the *Journal*, we shall describe its contents in some detail. The Prehistoric material of Larisa is divided into two periods. The first is thought to begin somewhat earlier than Troy V and to resemble material from Troy and Demircihüyük. The second period, which began in Troy VI, appears to have continued until the Greek conquest of Larisa. Pottery, stone tools, a couple of bronze pins, a bronze dagger (cf. *Eurasia Septentrionalis Antiqua*, x, p. 84, fig. 10), and some figurines are published. The early pottery is hand-made; the later is wheel-made and burnished and shows occasional reminiscences of Hittite wares. The most remarkable of the figurines represents a human face, cf. Bossert, *Alt-Anatolien*, p. 26, fig. 162.

This volume also contains Greek terracotta figurines, the important architectural terracotta friezes having been published by Kjellberg and Åkerström, *Larisa* II, 1940. These figurines were found in houses. Schefold suggests that some of them (Cybele) may have been offered at a house altar in the guest-room of the Palace. Among the Archaic material is a wonderful bearded head dated by Schefold ca. 670 B.C., and some fine vase attachments in the shapes of bulls and lions. Late Archaic figurines include standing and seated women, some with children, and one kouros. Among the Classical terracottas, particularly important because of the paucity of localizable Eastern Greek material, are two fine reliefs, one of Aphrodite (Winter II, 200, 2) and one of Cybele enthroned between her lions. Both were made in the fourth century B.C. Some figurines fashioned after Tanagra models have chronological value because they must be dated before 280 B.C. There are also numerous figurines of actors.

Metal objects are of minor nature, but we note the fragment of an Archaic fibula (Blinkenberg Type XII, 5) and one La Tène fibula. Nine types of lamps are distinguished: two are local Archaic, two local of the fifth century, and three are Attic. Forty-three coins, mostly Ionian, are listed and identified (Ionia, Aeolis, Clazomenae, Colophon, Ephesos, Chios, Samos, Argos, Sparta, Persia).

Two thirds of the book is taken up by the description of pottery, on which Schefold's article in *JdI* lvii, 1942, pp. 124 ff., must also be consulted. Schefold suggests the following outline for the history of the local workshops: I, Sub-Geometric and Early Orientalizing, 700–650 B.C. II, Orientalizing, parallel with the early part of Rumpf's "Euphorbos Group," 650–625 B.C. III, The Finer Vases of Animal Style, related to the Eastern Greek *koine* ("Rhodian"), 640–610 B.C. IV, Declining Orientalizing Style, parallel with Rumpf's

"Kameiros Group," 625–550 B.C. V, Final Phase of Local Wares of Orientalizing inspiration. Overlapping and later replacing these groups are the banded vases and vases with floral oranment, the latter to be dated ca. 525–425 B.C.

Schefold discusses these local wares by periods and shapes. Although written in a somewhat poetic vein, his investigation abounds in careful comparisons and forms an important contribution to our knowledge of Eastern Greek styles. On the whole, the vases of Larisa are a provincial branch of Ionian vase painting. They are somewhat careless in form and design but rich in color (especially in red), ornamental decorations, and animal motifs (see the good frieze of horses pl. 26, 3–7). A few sherds exhibit human figures, such as oarsmen (?) of mid-seventh century and a Zeus of ca. 600 B.C. The Animal Style is proved to have continued until mid-sixth century by a tomb, in which a local vase with animal frieze was found together with a Late Corinthian lekythos. A peculiar group of black-figure fragments shows Corinthian influence from the times of the Chigi vase to the late sixth century B.C. The Grey Ware (cf. W. Lamb, *JHS*, lii, 1932, pp. 1 ff.) flourished in the sixth and seventh century; in the fifth and the fourth it was used only as household ware, and that sparingly. The most interesting pieces are five lids decorated in relief with figures of lion-hunting horsemen, of mid-seventh century. They make a curious comparison with the horsemen from Sardis discussed in *AJA*, xlix, pp. 570 ff. Some deep bowls of this ware are stamped with seals (lions, rosettes). The common wares with bands and floral ornaments were carefully studied by Boehlau, who draws parallels with Ionic and Attic wares. The vases with floral patterns are said to have come from the "Athenerschutt" of 425 B.C., but some look Hellenistic.

Imported vases are most frequent at the time of the Greek conquest and then again from the late sixth century on. The only Mycenaean sherd is unstratified. A half-dozen Geometric sherds were imported before the conquest. Schefold considers these fragments Kymaean, but one of them looks like a "Cycladic "cup (pl. 57, 3). Others come from squat jugs similar to those of Rhodes and Samos. Of the Rhodian bird bowls, one is early and must be dated in the eighth century (pl. 57, 12). Unfortunately, no reproductions are given of the Protocorinthian sherds mentioned in Boehlau's excavation notes. Corinthian fragments range from Early through Late Corinthian. Chiote and Clazomenian (a hero with a lion or Cerberus) are also represented. Attic import begins about mid-sixth century ("Kleinmeister" cup) and continues to ca. 300 B.C. Among the imported Attic pieces are examples of the stamped palmette ware and a fine red-figure sherd with the head of a warrior (pl. 59, 2, described as "Douris?").

As Schefold points out in his summary, the importance of Larisaean pottery lies in the Orientalizing and the Archaic periods. During the past two decades, scholars have begun to recognize the total inadequacy of the traditional classification of Eastern Orientalizing styles as "Rhodian" and "Milesian." A multitude of local factories were active on the islands and in Ionia. In the report on Larisa we have one of them firmly localized and clearly described, but, as any student of Eastern Greek art knows, there are many more which remain to be investigated. Only continued systematic excavation and publication can clarify their history and through them the history of Ionia.

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VIRGIL'S MIND AT WORK by *Robert W. Cruttwell*. Pp. ix+182. Oxford, Basil Blackwood; New York, The Macmillan Co. 1947.

In a one-page introduction Mr. Cruttwell states the purpose of his book as being to "follow Virgil's mind at work upon his synthesis" of "things associated in his mind upon three levels – (1) that of unconscious relation to the poet's own heredity; (2) that of subconscious relation to the poet's own environment; and (3) that of conscious relation to the poet's own identity." The "symbolism of the Aeneid" is thus defined by the author. As long as Mr. Cruttwell deals with the concrete associations of the Roman Campagna or the fields of Mantua it is possible not only to follow him with interest but to accept as possible the subconscious telescoping of ideas in the mind of Vergil. Mr. Cruttwell's analyses have many a sound suggestion (and he takes the precaution of warning off those of us with prosaic minds) but symbolism whether implicit or explicit carried to the extent to which he stretches it makes mockery of the crystal clarity of Vergil. I make no claim to an understanding of large sections of the book. I bow to the learning of the author. But I still believe that when Vergil bade farewell to Alexandrine pedantry he did so definitely and that he wrote the story of Rome's foundation in a simpler and more straightforward manner than Mr. Cruttwell would have us think.

YALE UNIVERSITY C. W. MENDELL

DER GEOMETRISCHE STIL IN ITALIEN. Archäologische Grundlagen der frühesten historischen Zeit Italiens. By *Åke Åkerström*. Pp. 176, figs. 52, pls. 33. Acta Instituti Romani Regni Sueciae, Vol. ix. Lund, 1943.

In this handsome monograph, Åkerström presents a systematic discussion of the painted Geometric vases of local manufacture found in Sicily, Calabria, and Tuscany. He attempts to define the Greek sources of this pottery, and he extends his investigation to the bronzes and the incised funerary urns of the Vil-

lanovan culture of Central and Northern Italy.

Åkerström suggests that the Italian Geometric style came from Greece, with the Greek islands an important factor in the early phase. The Greek influence reached Tuscany first, then Southern Italy; Sicily came last. Villanovan potters and metal workers copied their decorative vocabulary from Late Geometric Attic vases.

In order to maintain this thesis, Åkerström performs a forceful re-arrangement of chronology. He boldly proclaims that "no Geometric vase found in Italy is earlier than 700 B.C.". Protocorinthian vases found in Sicily must be re-dated; foundation dates of Greek colonies must be lowered. Syracuse was founded in 675 B.C., not in 734 B.C. The Phoenicians are subjected to the same treatment: Carthage and Motya were not founded until 675 B.C.

Hitherto the Villanovan culture was thought to have preceded both the Etruscans and the Greeks in Tuscany. Åkerström argues that the arrival of the Greek traders (ca. 725 B.C.) caused the formation of the Villanovan culture. The Etruscans did not arrive until 675 B.C. He does not explain where the Villanovans came from, although in a footnote he considers "the interior of Central Italy" a possibility.

The problems discussed by the author are interrelated, but we shall gain a better insight into their nature, if we treat them separately.

Let us consider first the dating of the Greek Geometric and the Greek Orientalizing styles. It is fashionable among vase specialists to pretend that we have an absolute chronology of Geometric vase painting. We have no such thing. Historical pegs are few. The most pertinent are the foundation dates of Greek colonies in Sicily and historical events affecting those Near Eastern sites, which have yielded Greek material.

The dating of Greek colonies in Sicily leads into thorny questions of Greek chronography, but there has been considerable disposition to assume that some of the foundation dates were based on local records. Cf. B. Schweitzer, *AM*, xliii, 1918, p. 29, E. Ciaceri, *Storia della Magna Grecia* I, 1928, pp. 66 ff. Even the skeptical Burn reluctantly accepts the Thucydidean chronology. Cf. *JHS*, lv, 1935, pp. 130 ff. It seems to the reviewer precarious to surrender these absolute dates in favor of "symbolic" dates achieved by arbitrary interpretation of archaeological evidence.

In the Near East, excavations in Asia Minor, Syria, and Palestine hold out the promise of providing historical points fixed by the Assyrian and Palestinian chronology. How does this evidence affect the dating of Greek Geometric wares? At Tarsus and Mersin, the earliest Rhodian bird bowls, "Cycladic" cups, and certain other Greek wares must be dated at least as early as the eighth century. At Al Mina, a Protocorinthian vase is dated in mid-eighth century by M. Robertson, *JHS*, lx, 1940, pp. 16 and 21. There may be other Greek pieces or at least pieces influenced by Greek Geometric styles among the material from the lowest levels of that site. (Levels 9 and 10, Museum of Antioch, Cf. L. Woolley, *Antiquaries Journal*, xvii, p. 10 and *JHS*, lviii, 1938, p. 16). Hama has yielded "Cycladic" cups and other Greek Geometric sherds in Level E, which represents the city destroyed by Sargaon in 720 B.C. (Cf. H. Ingholt, *Rapport préliminaire sur sept campagnes de fouilles à Hama*, pp. 98 and 118, where Friis-Johansen dates the "Cycladic" cups earlier than 800 B.C.). The appearance of Greek objects at Al Mina and Hama in the first half of the eighth century is compatible with the historical situation in North Syria at that time. In a suggestive article, S. Smith argues that the Greeks founded Posideon-Al Mina during the years 780–740 B.C., when the dominance of Urartu in the Orontes region afforded them protection against the Phoenicians (*Antiquaries Journal*, xxii, 1942, pp. 87 ff., a reference for which the reviewer is indebted to Dr. William S Smith). In Palestine, the date of Greek imports is pushed back into the tenth century for Tell Abu Hawam (R. W. Hamilton and W. A. Heurtley, *QDAP*, iv, 1935, pp. 5 f., 23 f., 67 f., pls. 12 f., 88. Heurtley regards the vases as Thessalian Protogeometric). There the level in which the vases were found is assumed to have come to an end with the invasion of Shishak in 926 B.C. It is as yet difficult to evaluate the Near Eastern evidence with precision, but it certainly suggests, for some of the so-called late Geometric types of Greek pottery, dates higher than those assumed by Åkerström.

The history of the Phoenician colonization, so radically revised by the author, is a subject which cannot be settled without reference to literary tradition and epigraphy. Much of the material is new. A brilliant summary based on expert knowledge has been provided by W. F. Albright, who places the Phoenician colonies in Sicily as early as the ninth or even tenth century B.C., and upholds the foundation date of 814 B.C. for Carthage (Cf. American Council of Learned Societies, *Studies in the History of Culture Presented to W. G. Leland*, 1942, pp. 40 ff.).

Thus there are weighty reasons to reject the revision of Greek chronology proposed by Åkerström. Furthermore, many of his arguments are based on a faulty premise. The development of most Protogeometric and Geometric wares is notoriously slow, stretching over four centuries (1100–700 B.C.). If a vase-type is encountered in a context of Late Geometric character, it does not by any manner of means follow that the same type could not have existed a hundred years earlier.

Finally, we must turn to Italy and the Villanovan problem. Against Åkerström's contention that Villanovan and Etruscan cultures were near-contempo-

rary must be set the clear evidence of stratigraphy in such sites as Ardea and Veii (Cf. A. Boethius, *Eranos*, xli, 1943, pp. 172 f., M. E. Blake, *Roman Construction*, Washington, 1947, pp. 74 f.). Here again, the problem is not purely archaeological nor confined to the relations of the Villanovans with the Greeks and the Etruscans. It must be viewed against the general picture of the development of Iron Age cultures in Italy. (Cf. *AJA*, xlv, 1941, pp. 312 ff. and xlvii, 1943, pp. 94 ff.)

Åkerström's thesis of a Greek origin for the ornaments of Villanovan vases stands and falls with the derivation of the stepped maeander from Greek sources. But individual ornaments, and particularly individual Geometric ornaments, are not a safe foundation for a chronological system. Much more significant is the character of vase shapes and the method of decoration. The bulging, loosely constructed Villanovan urns are totally different from the clean-cut and precise Greek vessels. Different, too, is the use of Geometric designs. In contrast to the Greek system, which confines the ornaments to clearly defined zones, Villanovan ornaments are not firmly anchored to the important parts of the vase and the decoration often consists of isolated squares and triangles unsupported by horizontal lines. The *painted* Geometric vases of Tuscany are derived from the Greek pots; the *incised* Villanovan urns go back to Central and Eastern European traditions. A survey of possible European sources has been given by Merhart in his article on "Donauländische Beziehungen der früheisenzeitlichen Kulturen Mittelitaliens," *Bonner Jahrbucher*, vol. 147, pp. 30 ff., pls. 10, 12. (The article was made available to the reviewer by P. Jacobsthal and H. O'N. Hencken.) In this monumental study, Merhart also makes a convincing case for the derivation of many types of Italian metal work from Eastern European sources. Finally, no culture is ever formed just by borrowing a few decorative motifs. If we consider the entire material equipment and the social organization of the Villanovans, we perceive that they are much more similar to those of the Prehistoric cultures of Central and Eastern Europe than to those of Geometric Greece.

If our criticism of Åkerström's arguments is just, then it follows that the traditional sequence—Villanovans, Etruscans, Greeks—must be maintained for the cultural development of Tuscany, although it is possible that the initial date of the Villanovan culture should be brought down to ca. 800 B.C.

Despite the disagreements expressed in this review, Åkerström's book has considerable merit. He has brought together the first good collection of painted Geometric vases from Sicily, Calabria, and Tuscany many of which appear for the first time in photographic reproductions. He has made a serious start toward a detailed comparison of Greek and Italian material. He has proved that the painted Geometric pottery of Tuscany stems from the Late Geometric phase of Greek ceramics. Even the one-sidedness of his chronological premises has a definite value, for it trains the spotlight on the controversial points of Geometric chronology and thus clears the way for future research.

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STATUES ON COINS OF SOUTHERN ITALY AND SICILY IN THE CLASSICAL PERIOD (Institute of Fine Arts. New York University), by *Phyllis Williams Lehmann*. Pp. x+72, pls. 15. New York, 1946. $3.50.

The topic of this New York University dissertation is of considerable importance for Greek Art. Whether or not we recognize copies of contemporary statues on Greek coins is partly a question of definition. Conscious copying was not a general practice of classical Greek artists, yet more or less faithful renditions of established types are no rarity in the minor arts such as bronzes and terracottas; and occasional references to evidently famous statues occur in vase paintings and votive reliefs. The problem, consequently, is not limited to numismatics but concerns the general typology of Greek art. Whenever a line of typologically typically related works is established, we may ask what started it.

The present investigation is limited to western Greek coinage between 480 and 323 B.C. But here the author takes a positive stand: "Greek coinage of the classical period includes a certain number of numismatic types which are neither more nor less than faithful reproductions of contemporary statues" (Preface). On this basis her book, presented in a scholarly manner and well printed, offers new, substantial, and very interesting contributions to a discussion of long standing (cf. her introduction, pp. 1 ff.).

To demonstrate her method the author begins by analyzing two Hellenistic coins, as test cases. Both are issues of Herakleia in Lucania, in whose coinage the *heros eponymos*, Herakles, appears in frequent variations. But only with her second demonstration (pp. 7 ff.) does the author's comparative method score a full success. In this case the coin type is clearly identical to a statuary type well established among Roman copies. To the examples named, p. 7, n. 33, the materials in P. Arndt, *La Glyptothèque Ny-Carlsberg*, Munich, 1912, pp. 147 ff., should be added. The reviewer once tentatively dated this type, best known in the Ludovisi Hercules, by comparing it to the Aeschines at Naples; text to *EA*, nos. 4172–73. Now the comparison with the didrachm of Herakleia, ca. 281–272 B.C., confirms the date and, moreover, probably localizes the original in South Italy.

The other test case concerns the standing Hercules of 295 B.C., with cornucopia in the left and jug in the right hand (p. 5). First the author compares this representation with two Roman bronze statuettes: same stance, same attributes. Though there may be some doubt about the latter point, the comparison is warranted. Unfortunately there are complicating factors. A statuette in Berlin, Antiquarium No. 6476, is said to be a "variant" of this type (p. 6). It shows the same posture except the head looks to the other side, and the right hand evidently held a different object. If this statuette is a "variant," so is another Herakleia coin not mentioned by the author, W. Giesecke, *Italia Numismatica*, Leipzig, 1928, pl. 7, no. 6. On this coin Herakles leans his right hand on a club; his left holds the cornucopia. To judge from the photograph, the Berlin Statuette might have done the same. Its right hand, now empty, much resembles the statuettes holding a club in this fashion, illustrated in Mrs. Lehmann's pl. 13, figs. 8 and 13.

The two latter works, however, carried bow and arrows in the left hand, not a cornucopia. The author compares them, correctly, to a perhaps somewhat earlier coin of Herakleia (p. 53, n. 1 and pl. 12, fig. 1) thereby stipulating the existence of another statue of the standing Herakles in that city (p. 57). The bronze statue Ny-Carlsberg no. 261 and the Hercules at Syracuse may represent the archetype of this series.

This evidence forces us to deal with not two, but three different types: *a*, Herakles standing on right leg, holding a cornucopia and jug or kantharos (author, pp. 3 ff.); *b*, similar, holding club, bow and arrows (pp. 53 ff.); *c*, similar, holding club and cornucopia as in the coin mentioned above (add Giesecke, *l.c.*, pl. 16, no. 8; Berlin Statuette, author pl. 1, fig. 4, not recognized by her as a special type). All three types wear the lion skin over the left arm in addition to their other attributes. While the "statuesque" appearance of three Herakleia coin types seems thus vindicated, there is no certainty that each type derived from a different statue, nor that three so closely related statues really existed in the city. More likely both claims are true of the second type (author, pp. 53 ff.).

A major problem concerning all comparisons between coins and statuary here becomes apparent. On what grounds, do we determine the "statuesque" character of a numismatic image? And, in the coinage of a city which at various times represented the same mythical character or deity, in gradually changing forms, how do we distinguish between a new "statuesque" type and mere variants of an older type? Obviously all representations of the same character in the coinage of a city and their relations to extant statuary must be reviewed before such distinctions can be undertaken with safety.

The River Gods of Selinus are a case in point. The coins are now beautifully presented in G. E. Rizzo, *Monete Greche della Sicilia*, Rome, 1946, pls. 31–33. Mrs. Lehmann considers the earliest type, the striding Selinus, a pictorial composition (because of its side view? p. 22, n. 40). If this is accepted and in contrast, the frontal representation of Hypsas explained as a statue (p. 17), one must ask why the subsequent frontal image of Selinus is not also a statue. For the much disputed *Idolino* looks remarkably similar to this type. The author's own comparison between the *Idolino* and the Krathis stater of Pandosia (pp. 23 ff.) is less satisfactory, because the latter coin, itself, probably imitates the frontal Selinus, rather than the Hypsas; (see p. 23 and references, p. 22, n. 40, and p. 27, n. 40). In any event all these River Gods are related typologically, and the frontal Selinus after 435 B.C. (Schwabacher), is only a modernized, "statuesque" version of the earlier "painterly" representation. *Idolino*, frontal Selinus, and Krathis form an interrelated group, inasmuch as they show the same type on approximately the same stylistic level. This might mean that there was an "original" statue on that level—perhaps the *Idolino*. But was there no earlier statue?

The question is complicated by the observation that the coin type of Hypsas, also, would display a similar motif if transformed into a statue. Stylistically it falls between the striding and the frontal types of Selinus; *cf.* Rizzo, *l.c.*, pl. 31, figs. 7–14 and pl. 33, figs. 1–5. At any rate the comparison (author, pp. 15 ff.), between this figure and the bronze youth from Via Abbondanza reveals a palpable discrepancy of style. The Hypsas seems approximately on a level with the Apollo from the Tiber; while 450 B.C. (p. 18) is probably too high a date for the brisk Polykleitan forward movement of the bronze statue. On the other hand the frontal Selinus, though nearer in time, shows a somewhat different stance—more like the *Idolino*. It seems therefore that the representations of neither Hypsas nor Selinus solve the riddle of the bronze youth from Via Abbondanza. A clue to the latter problem must still be sought among the Roman copies. The numismatic evolution of the Selinuntian types is fairly clear, but the question remains where did the corresponding sculptural tradition start: before or after the famous Hypsas?

Similar questions are encountered among the coins of Metapontum. The early "Apollo ad Metapontum" (pl. 7, fig. 1, pp. 33 ff.), standing with bow and laurel, recalls a statue of the severe style; and the comparison with a Greek (West-Sicilian?) bronze statuette in the British Museum lends color to this impression. Herodotus might have seen this statue amidst the laurel trees on the market place of the city (IV, 15). Metapontum lies in the cultural area of Tarentum;

one expects the head of this statue to resemble the *Tarentiner Apollonkopf* discussed by H. Bulle, *Winckelsm. Pgrm*, 99, 1939; cf. the Katane tetradrachm, K. Lange, *Götter Griechenlands*, Berlin, 1941, pl. 4. More material might be found among the Roman copies. But the neo-classic bronze statue from Egypt, in London (pl. 7, fig. 3), can hardly be of much help in this case. Its head especially points to a quite different original. It seems of a type with the so called "Jacchus," Vatican, Braccio nuovo, no. 24 and Museo Capitolino, Stanza dei Filosofi, no. 85. Is this another River God?

The material grouped around the second "Apollo ad Metapontum," whose right hand rests on his hip (pp. 35 ff.), appears more complex. The interesting series of bronze statuettes assembled by the author falls into three distinct groups. Two statuettes, pl. 8, figs. 2 and 3, are akin to each other as well as to the Metapontum half-stater, figs. 1, A and B. Statuettes, figs. 4 and 5, while related, represent a different prototype. And figs. 6–8, including the Karlsruhe "Narcissus," form a group quite apart from the Metapontum stater; the statuette from Volubilis, *M Piot*, 33, 1933, pp. 132 ff., should be added to the list. The difference is one of type as well as style. For the statuettes of the Narcissus group not merely hold the attribute which their right hands grasped—whatever it was—but lean on it. Their motif heralds the Farnese Hercules.

Again, one asks why all Apollo issues of Metapontum were not included in the investigation. For instance, the coin discussed in *JdI* 52, 1937, p. 105 and fig. 3, shows a sufficiently "statuesque" standing Apollo and, one much more similar to the Sabouroff bronze than the earlier Hypsas type compared by the author (p. 19, n. 30). The statuette in Cleveland, (*Small Bronzes of the Ancient World*, Exhibition, Detroit 1947, p. 40, no. 75), this coin and the Sabouroff statue form a surprisingly close group. Must we assume that a third "Apollo ad Metapontum" has come to world fame?

The following chapter involves another crucial problem: the distinction between pictorial and sculptural representation in Greek art. This chapter deals with the seated Hercules in the coinage of Croton. Two types appear almost simultaneously: one, raising the left arm to hold the club (pp. 43 ff.); the other, leaning on the left elbow while the right arm rests on the knee (pp. 40 ff.) It must be said at once that both motives occur in contemporary reliefs as well as statues; see the famous Herakles and Theseus reliefs "with three figures," as reconstructed in *RM*, 54, 1939, p. 235. The comparison between the Croton stater, pl. X. fig. 1, and the Herakles Altemps, is most instructive. The statue Altemps seems to be a mediocre copy rather than a Hellenistic version (p. 45), of a classical prototype. But, even if we assume that the maker of the coin copied this particular statue, we must admit he adapted it to a later style and an already existing, "pictorial" tradition. Nor does the story end at this point. For the interesting bronze Statuette in Liestal (Mercury?), *AA*, 1939, pp. 482 ff. and fig. 7, cannot be a copy of the Herakles Altemps. Yet it is closely related to the Croton stater or, at least, follows the same figural tradition. The statement that with the exception of the Altemps statue, "no other existing figure is iconographically comparable" to this coin type (p. 45), must be revised.

It seems that especially with seated figures the antecedence of either painting or statuary is often difficult to establish. Certainly it is not necessary to assume that the resting Herakles in the other Croton stater, pl. 9, fig. 1A and B, was derived from a statue. Croton was a city of famous paintings. Even Lysippus' Epitrapezios, if at all related to this type (pp. 40 ff.), might have been inspired by a painting as well as by a statue; cf. L. Pernier, *Statuetta di Ercole*, etc. and author, p. 51, n. 12. Unfortunately, the typological similarity to the Croton coin is not sufficient to prove either hypothesis.

The last cited Croton stater was sometimes considered the prototype of a similar, if somewhat provincial, representation of Hercules seated with a club in his right hand on a didrachm of Thermae Himerenses; Rizzo, *l.c.*, pp. 129 ff. But the case is really more interesting, as one learns from its discussion here, pp. 49 ff. For the Thermae coin does not exactly repeat any type in the coinage of Croton. Instead, it seems to refer to a sculptural type recognizable, for instance, in a marble statuette at Leningrad, pl. 11, fig. 2. The statuette from Sinalunga (fig. 5), much discussed lately, is plausibly explained as a variant of the same creation. Only, the bronze statuette Loeb (pl. 11, figs. 3–4) cannot form a part of this group. With its numerous copies and variations it poses a special problem; see the reviewer's text to *EA*, no. 4300 f. For one thing, almost all members of the "Loeb" group represent Mercury, not Hercules, and the testimony of the small bronzes is corroborated by the marble copy from Merida. Secondly, even though the club of Hercules be placed in the right hand of the Loeb statuette (author, p. 51), the resulting posture would still not resemble the Thermae coin. We therefore conclude that the Loeb Mercury derived from another original.

These remarks must not detract from the value of the book as a whole. Its chief merit lies in the critical assembling and sorting of material and observations of detail, too numerous to report. That the evidence so gained can often be differently interpreted, is not surprising. Yet in almost every case, new suggestions and comparisons have secured a broader and sounder basis for future investigations. Much disputed prob-

lems like the classical style of Sicily receive interesting sidelights (pp. 9 ff.). Last, not least, these discussions have added much to our knowledge of Greek coins in their dual role: as original monuments of Greek art, and as auxiliary materials for the recovery of lost works of art.

INDIANA UNIVERSITY OTTO J. BRENDEL

OBSERVATIONS ON FAMILIAR STATUARY IN ROME, by *Rhys Carpenter*. (Memoirs of the American Academy in Rome, vol. xviii). Pp. 112, pls. XXXIV. American Academy in Rome, New York, 1941. $5.00.

In his treatment of a literary or archaeological tradition Rhys Carpenter may be expected to be stimulating if not startling. The present observations on ancient sculpture, late in appearing, are no exception. And although vigorous opposition may be taken to some of the conclusions the methods of analysis are certainly more sound, and more scientific—in the best sense of the word, than the traditional approach of forcing conclusions to fit the literary evidence in spite of confusion and contradictions.

Professor Carpenter's thesis is that classical archaeology is the creation of philologists; the literary canon was applied that statues fall into groups of replicas just as surely as manuscripts duplicate one another; and there has been the inference that surviving statuary reflects the ancient canon of artistic judgement with a *Meisterwerk* always in the background. Professor Carpenter denies the validity of this method because it attempts to recreate sculptors where it should rather try to analyze sculpture.

The numerous copies of Greek originals, or presumed originals, in Italian museums offer abundant material for displaying the author's methodology. A few examples from the more than a dozen treated in the text may be taken as demonstrations. The Marsyas of the Lateran, for example, is cited as the derivative of a work by Myron in every handbook or treatise on Greek sculpture. Professor Carpenter admits that it is difficult to compare the Marsyas with the Diskobolos by the same sculptor because of the difference in subject matter. Yet the differences between the treatment of the bone structure of the forehead, the differences between the treatment of the hair and muscles, make reconciliation untenable. At least fifty years, technically speaking, lie between the two heads. The Lateran Marsyas belongs at the earliest to the last decade of the fifth century and the evidence of Pliny that Myron made a Marsyas is simply not sufficient. The procedure of establishing an identity between an extant statue and an ancient literary reference must, therefore, be viewed with the greatest skepticism.

Just as the philological method is unsound in evaluating extant copies of ancient originals so also is the method of ascribing a Roman work to a Greek prototype, though unknown, by emphasizing the style of one particular anatomical segment. The Esquiline Venus and Lo Spinario are examples of this fallacious procedure. Professor Carpenter demonstrates in the pages of this work under discussion, as he has in his lectures for the Institute, that these statues are hybrids. The fifth century heads on Hellenistic or Lysippan bodies simply point to the probability that the artists were attempting to re-evoke the magic, and probably the higher market prices, of the older masters in an age when fifth century Greek ideals were revived, if briefly, in imperial Rome.

The archaeological method, carried into the realm of its ultimate logic, may be applied to statues even more difficult of analysis—even to the extent of identifying an unknown, and supposedly generalized, work with the subject it may reasonably represent. The "Hellenistic Ruler" of the Terme was identified by Professor Carpenter some years ago (*AJA*, xxxi, 1927, pp. 160–168) with the Roman general Lucullus. In this re-evaluation of 1941 the author adheres to the former identification and turns his analysis to establish the statue as the work of a Roman sculptor of the late Republican period, not the work of a Greek emigré Apollonios Nestoros. In an even more recent discussion of the "Hellenistic Ruler" (*AJA*, xlix, 1945, pp. 353–357) Professor Carpenter sees in the statue an expression of such cruelty, cold-blooded and vindictive arrogance, that, with other evidence, he is persuaded to assign it to Sulla rather than Lucullus. The archaeological method, it would seem, permits a certain amount of flexibility and reconsideration. It also permits other observers, infinitely less well qualified, to see nothing more vicious in the face of the "Ruler" than the puzzled expression— as though, perhaps, that of a model posed in a bright light— of a well-fed, young athletic type.

These discussions, and they are only samples, are sufficient indication that the analytical rather than the literary approach to ancient sculpture— or at least as well as the literary approach— must receive serious consideration in evaluations that are basic in the history of art. In the late Renaissance lists of paintings there have been glaring discrepancies in the ascriptions, errors made by persons closely associated with the owners and, to a reasonable extent, familiar with the works and techniques of earlier artists. There is no good reason to assume that ancient observers, either at first or second hand, would be any less fallible. When the literary and archaeological methods are in disagreement, and when the literary evidence is not in accord with the visible facts, the archaeological method must surely be preferred. The analyses by Professor Carpenter of familiar sculptural works in

Rome are important, therefore, as studies in methodology, but no less so for the revived interest they create in the works themselves.

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CHERCHEL ET TIPASA. RECHERCHES SUR DEUX VILLES FORTES DE L'AFRIQUE ROMAINE, by *Paul-Marie Duval*. Pp. 180, figs. 25, pls. 14. Institut français d'archéologie de Beyrouth. Bibliothèque archéologique et historique, Tome xliii. Paris, Librarie Orientaliste Paul Geuthner, 1946.

With this book Duval has initiated the long neglected systematic study of the ancient town walls of North Africa. He has been able, thanks to recent excavations by others and to soundings of his own, to subject the remains of the walls of Cherchel and Tipasa to a thorough scrutiny, to describe their main features, to form an idea of their date and relation to other imperial fortifications, and to draw important inferences as to the history and topography of the two cities. His publication demonstrates how much a searching study of ancient town walls may yield and is a notable contribution to our understanding of Roman civilization in Africa.

Cherchel-Caesarea, provincial capital and naval base, and Tipasa, center of local trade, differed only in size. The physical type was the same, and, although here exemplified in two towns lying close together near modern Algiers, may be considered the dominant one along the coastal plain of Mauretania. This type, distinct from the military settlements of the interior frontier, was that of the first Roman cities developed from Punic or native nuclei.

Both Cherchel and Tipasa stretch along the sea behind their modest natural harbors at the base of the foothills of the mountain barrier. The plan of both has as its axes the great coastal highway and the port and single main road penetrating the interior. In each case the walls, resting at either end upon the sea, shield the long exposed southern flank with a powerful front crossing relatively level ground. The shorter east and west legs are covered by ravines and follow natural declivities and eminences. Cherchel's circuit of some three miles swung up far beyond the limits of the city proper. Tipasa's mile and a half of wall cut straight across the coastal plain hemming in the thickly built area.

Cherchel's trace was laid out with the mastery and economy of the best Roman practice. Full advantage was taken of the general features of terrain, but the trace was kept as short and efficient as possible by the avoidance of sharp salients and reentrants. Towers were disposed in strict accordance with the vulnerability of the curtains to be flanked. Circular forms were adopted in place of rectangular at hinge points in the trace. At Tipasa the trace, while showing the same general characteristics, was more rigidly rectilinear in design.

At both sites the principal gates were of the type set back from the line of the curtain at the neck of an open-fronted reentrant forecourt. In the two examples at Tipasa the forecourt is a highly developed version of the curvilinear "half-moon" plan. The single example at Cherchel has straight flanks. Cherchel displays the hitherto unexampled feature of three great circular forts or keeps, 100–130 feet in diameter, set in the trace at the most critical hinge points of the south front. These apparently were designed not only as exceptionally powerful defences of key positions but also as citadels to be held after the wall and the town had been taken.

Both circuits were built of Roman concrete faced with coursed rubble of various types. The curtains of Tipasa and the original simple curtains of Cherchel were but five to six feet thick at the base, an absolute minimum to provide a serviceable battlemented wall-walk at the calculable height of 22 feet. Fragments of merlons found at Cherchel had a thickness of a foot and a half. Tower walls buttressed by each other, by floors and by the adjacent curtains were notably less heavy.

The two walls find their closest parallels both formal and structural in the ample circuits of early imperial North Italy and Gaul. Dura furnishes some general analogies. More might have been found in Poidebard's *Trace de Rome* and *Limes de Chalcis* had they been drawn upon. Unfortunately, the evidence for dating the fortifications of Cherchel and Tipasa is confined to the typological sequence of the coursed rubble facings of their walls and to the scanty and purely circumstantial historical data touching the towns themselves and the province. No stratigraphy and no dateable material was observed in the excavations of either place. At Tipasa there were no traces of modifications or repairs necessitated by neglect or war. At Cherchel it appeared that the field faces of two widely separated towers and one intermediate curtain of the west front had been rebuilt.

Duval distinguishes three types of coursed facing employed at Chercheal. These he calls the "Careful," the "Semi-coarse" and the "Coarse," with reference the size of the mortar joints. The entire system of Tipasa is constructed with the "coarse" type. The greater part of Cherchel's defenses is built with the "careful" type. The three types are assumed to have succeeded each other in time in the above order and over some two centuries, representing a progressive decline in material and technical resources. Loosely related to the absolute chronology of the province, "careful" is taken to characterize the period of the organization of the Roman province in the years immediately following A.D. 43, and "coarse" the troubled

years, when, after the murder of Gordian at Carthage in 238, the long peace came to an end. "Semi-coarse" falls somewhere in between.

On this basis Duval places the "careful" portions of Cherchel in the time of Claudius, the "semi-coarse" portions, i.e. the repairs of the west front mentioned above, which comprise battlements, stairs and the interior body of the north and south sections of the west front, to the late third century. Tipasa, by the same token, was first fortified at the time of Cherchel's "coarse" work. The terminus ante is A.D. 371, when Tipasa's relatively new defenses resisted the assaults of the Moor Firmus while Cherchel was taken.

It is likely that further study and excavation will lead to revision of Duval's chronological scheme. Meanwhile it may be suggested that the evidence he has already put before us may be read rather differently. In the construction of the walls of Cherchel there may be seen three distinct steps. There is first a complete circuit of wall, which, apart from the repairs on the field face of the west front, includes all the towers and circular forts and constitutes now complete and finished curtains and now merely the outer shell of heavier curtains. Its facing is of the "careful" type, and it rests on footings projecting beyond its faces both interior and exterior. Where it is designed to form by itself finished curtains, *viz.* on the whole east front and on the steep central sector of the west, it has the minimum effective width of the curtains of Tipasa, 1.50–1.70 m. Elsewhere, *viz.* along the south and west fronts, its curtains are of the same thickness as the tower walls, 1.00–1.20 m. Here they were indeed designed, as the footings show, to stand by themselves, but not to carry a battlemented wall-walk, hence not to serve as more than a temporary screen between towers. They were designed, we must suppose, to be completed as fortifications as soon as the resources of the colony would permit.

Steps two and three are the steps of this completion. Two concerns the exposed south front alone. Along its entire length the curtain screens were backed by walls, apparently of the same type of concrete but without facing, 2.00–2.10 m. thick. The result was stout curtains 3.30–3.10 m. in thickness, capable of providing an adequate fighting top. Step two followed step one almost without interruption, as shown by the facing of the reveals of the south postern. Step three concerns the south and north stretches of the west front. Here the curtain screens were backed with socles, 1.70 m. and 3.25 m. in width where measurable, which supported the piers of a continuous arcade, designed to buttress the curtain screens and support a battlemented wall-walk. Socles and piers had facing of the "coarse" type. In the same construction and at the same time stairs were built to the now serviceable wall-walk beside all or most of the towers of the west and south fronts, and battlements were placed on the curtains now ready to receive them.

In short, on this reading of the evidence, Duval's "careful" and "coarse" periods are merely steps in the execution of a design laid down from the beginning and completed as circumstances allowed. The close interrelation of all three steps in their progress toward the completion of the fortification as a whole would indicate that no great lapse of years is involved. "Careful" and "coarse" describe differences of build and cost rather than of time. Inherent probability and the closely parallel material of Gaul and North Italy would suggest a Claudian date. Tipasa cannot be separated from its neighbor. At Cherchel at some later time two towers and one curtain of the west front were breached by mining or ramming and rebuilt with rubblework of a slightly different appearance, Duval's "semi-coarse."

In the face of the possibility of two such divergent interpretations, it is regretable, where so much depends on the analysis of construction, that this receives a most inadequate presentation. The chapters on "Modes of Construction" limit themselves, practically speaking, to the formal description of the three types of coursed rubble facing. Scattered references elsewhere in the work do not supply the detailed and systematic information which is wanted on the materials employed for the facings and any differences between types in this respect, on the material and size of the caementa in the body of the concrete, how they are laid, the qualities and quantities of mortar and differences in these respects. This deficiency is the more remarkable in that it is the author's intention that Cherchel and Tipasa should supply criteria which may be applied to the analysis of construction on other North African sites. Similarly, occasional references will not take the place of a systematic presentation of the structural relationships of parts and periods. Breaks and bonds between towers and curtains, curtains and gates, one type of construction and another are nowhere consistently described. This essential information might have been supplied by the drawings, had it been possible to prepare satisfactory ones under wartime conditions.

If some inadequacy in the drawings is excusable, it is less easy to understand the discrepancies, particularly evident in the Tipasa section, between measurements reported in the drawings and those cited in the text. This may occasionally be more than merely vexatious. His independence of his drawings, for example, involves the author in a misconception of the plan of the west gate of Tipasa, where the missing portal is clearly to be restored as identical with that of the south gate.

These, however, are the blemishes incidental to a work carried out under trying circumstances. They

detract but little from the total impression of a stimulating study of two fortifications rich in interest for themselves and as an expression of the life of two cities.

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THE MESSIANIC THEME IN THE PAINTINGS OF THE DURA SYNAGOGUE, by *Rachel Wischnitzer*. Pp. xii + 135, figs. 50. The University of Chicago Press, Chicago, 1948. $6.00.

Composed by one of the most competent scholars in the field of Jewish art, the book offers a challenging treatment of an attractive and fascinating subject.

The main contribution of the book, as pointed out by the author herself, is to be sought in the following two fundamental points: 1) The wall paintings, disconnected as they may appear, form a well planned system, an ideational unity; 2) the axis of that system consists in the messianic idea in its various manifestations.

The present writer is disposed to endorse whole heartedly the first statement, i.e. that the wall paintings constitute an organic unity of purpose and plan. It has been the point of departure of his own essay on the Dura Paintings quoted by the author, to be sure, only in the bibliography. In this essay, the writer also goes a long way with the author in attributing to the messianic theme, or, in his prosaic language, to the "Crown of Kingdom," an important role in the structure of the composition. In his scheme, however, the "Kingdom" theme constitutes only the spinal cord running through the panels of the lower zone, Register C, but does not pervade the two other zones. For in the writer's scheme each zone develops its own theme, and the three "crowns" together form a perfect triad.

Thus far we have indicated the area of agreement, total or partial, with the author. In descending, however, from general principles to their application in the explanation of the particular zones and panel, the divergences mount steadily. This is not the place to discuss all the differences of interpretation, and I will confine myself to pointing out some divergences as illustrations of a difference in approach and attitude. The writer of this, an amateur in art, did not intend to contradict the pioneers in this particular field of research, Kraeling and Du Mesnil, whose direction he follows whenever a substantial consensus exists among them. Only in case of wide disparity of views among his guides did he allow himself to find his own way, and even then only for the sake of simplification.

Amor novitatis et *horror simplicitatis*. The author on the other hand, confident in her mastery of the subject, does not trust the findings of her predecessors, and treats them with a certain air of contempt; otherwise she would not dismiss all the serious attempts of the valiant scholars to discover the plan of the composition with the sweeping statement that "they have so far brought no tangible results," whatever that may mean. She felt free to use her exuberant artistic imagination to see things which are inaccessible to lay spectators. No wonder the book is full of startling inventions and elaborate constructions. This may be congenial to a sensitive, artistic nature; the writer of this feels more comfortable at the sight of a lucid, classic structure.

The disregard of the modes of thinking generally accepted strikes us at the outset in the sequence of the zones introduced by the author. All other scholars, following an instinctive inclination, have adopted the descending direction, starting with the upper zone, Register A, and closing with the lowest zone, Register C. In defiance of this obvious trend of orientation, the author turns the zones upside down, and starts the reading and explanation with the lowest zone, Register C. One would think that there should be a compelling ground to reverse a well established sequence, but the technical reasons given are hardly convincing, and do not justify the overthrow of the order adopted by all the scholars. One may argue, for instance, that since the attention of the worshipper must be focused on the niche the paintings of the lowest zone flanking the niche should play only a secondary role in the composition lest they distract from the worship.

If there were at stake only a technical change of reading, we might indulge the author's urge of novelty. In reality, however, a much more serious matter is involved, namely an inversion of values. Looking at the west wall, the attention of the candid observer is attracted by the figure of Moses dominating the upper zone, then by the figure of Aaron and the Temple in the middle zone, and finally by the figures of Samuel and Mordecai in the bottom zone. The chronological descent is intuitively connected with a descent of values. As a matter of fact, there seems to be little doubt about the hierarchy of values in the series of Moses, Aaron, and Samuel and Mordecai. In reversing the sequence of the zones, the author also advocates, implicitly and explicitly, the reversal of the hierarchy of values embodied in the persons most conspicuous in the three zones. Indeed, highest in the scale, according to the author, are David, Elijah, and Ahasuerus (sic!) for their direct role in the messianic act; second in the descending line is Samuel, while Moses ranks third in the Messianic hierarchy, because "he plays no important role in the messianic drama." We cannot help thinking of the practice of certain Gnostic sects, such as the Cainites etc., to read the Scripture *à rebours*.

How repugnant such backward reading is to the rabbinic mentality, can be seen from the rabbinic

ruling that a volume of Prophets should not be placed *above* a Pentateuch, because it is considered a degradation of the Pentateuch to occupy a lower place than the Prophets.

Not less startling appears the direction of the reading of each zone adopted by the author. According to her system, "within each horizontal row of panels the scenes are arranged in counterparts converging on the niche." These two halves begin in the middle of the east wall, and have to be read in opposite directions, the one from left to right, the other from right to left. I confess my ignorance of the mosaics of S. Apollinare Nuovo at Ravenna which served as pattern to the author. But it seems to me that there is a difference between having to move the eyes and having to turn around the body. Indeed, in order to grasp the meaning of the scenes, according to the author, the spectator, who faces the west wall, must turn around towards the east wall not only once, but twice, first to start reading from right to left all through the south wall and the left side of the west wall, then starting again from the east wall, read from left to right, all through the north wall and the right side of the west wall. Unless the congregation had a special cicerone to instruct visitors how to read the scenes, no visitor could ever have grasped this complicated system of reading. They in all probability, always started the reading on the west wall as all the scholars, without the guide of the author, have done; and I think they are right. For common sense dictates that the reading of the main idea to be conveyed should begin at the west wall which faces the spectator entering through the east wall. Despite the divergence of opinions with regard to the order of the entire zones, there still exists a substantial agreement as to the beginning of the reading of the west wall. Register A begins at the right side of the niche with the Moses cycle; Register B begins at the left side of the niche with the Aaron cycle; finally, Register C again begins at the right side of the niche with the kingdom cycle in the writer's interpretation. In other words, the spectator faces the main theme in each zone directly, and need not turn around to grasp it. Once the spectator got the main theme in a simple, lucid representation, he could turn around, from right to left and from left to right and find the order and the meaning of the rest of the scenes.

The importance of symmetry in the composition of the Dura paintings has been pointed out by almost all the scholars, but the author seems to carry it out to the point of stiffness and geometrical partition hardly compatible with the dynamics of artistic expression.

The *horror simplicitatis* is also manifest in many interpretations of single panels of which the following are especially instructive.

One of the most lucid panels is undoubtedly the Esther scene (Panel 6, p. 29–34) in the lower zone flanking the niche at the left. Any unbiased spectator will be attracted by the two royal figures in the scene, Ahasuerus to the right and opposite him Mordecai riding on the royal horse. Nor will he fail to recognize the correspondence between this scene and the Moses-Pharaoh scene, the first panel at the right of the niche. In each of them two antagonistic figures are represented; the usurpers, Pharaoh and Ahasuerus respectively, to the right, and the legal claimants to royalty, Moses and Mordecai respectively, to the left. Should the observer set out to connect the scene with the Elijah cycle, he obviously would link Mordecai with Elijah. That is what this writer tried to do, whether with "tangible result" he does not know. Apparently this is too simple for the author. Instead, she makes the startling discovery that the real hero of the scene, besides Ahasuerus, is "Elijah" in the disguise of Harbona, one of the group in the center, who is gesturing to Haman (sic), exposing him. That the episode in which Haman was exposed took place in the privacy of the royal palace and not in a public procession, makes the explanation only more complicated, more mysterious. Unfortunately, the writer cannot follow the author in this mystery; he has no confidence in the "Zizith" which let her into the secret.

Is the identification of the group in the center of the Esther Panel really so desperate as to justify this *salto mortale*? Du Mesnil and Kraeling with their common sense do not hesitate to identify them with bystanders, Persians or Jews, acclaiming the procession. To this the author objects that the dress of the group indicates they do not belong to the ordinary people. It is amazing that the author, who carried the principle of symmetry to its extremes, failed to realize that the group under discussion corresponds perfectly formally and functionally to the group of Jesse's sons in the Samuel-David panel which forms the counterpart of the Ahasuerus panel. They too are clad in garments of distinction and their right hands raised toward the left. There the author finds no difficulty in saying "They each raise one hand in sign of acclamation." Obviously, here too the group raises the right hand in sign of acclamation, of course not of Ahasuerus or Haman, but of Mordecai who occupies here the place which Samuel and David occupy in the corresponding panel. In both cases the dress of distinction indicates the solemnity of the occasion, the enthronement of David and Mordecai respectively. The picture becomes still more lucid if we consult the Midrash which tells us that during the procession of Mordecai his pupils (represented in our group) acclaimed him by reciting the verse "Sing praise unto the Lord, O ye His godly ones." Supplementary corroborations may be found in Targum Sheni, all point-

ing out that Mordecai was acclaimed by Persians as well as by Jews. In some mysterious way the figure of Mordecai disappears from the author's range of vision, and is supplanted by the imaginary Harbona and Elijah. No reference is made to Mordecai in the author's exposition of the meaning of the Ahasuerus panel.

Let us now take an example from Register B, namely Panel 13 (p. 55–58). The general agreement among scholars is that it represents Moses and the miracle of the Well; they differ only as to which of the many miracles of the well it refers. In pure scholastic style, the author piles up difficulties in order to prove the impossibility of a literal interpretation and the necessity of an allegorical one. What the painter presents here, we are told, is not any miracle of the well, but Moses giving the Law to Israel. The present writer is not disposed to follow Philo in removing difficulties of the Biblical text by allegorical interpretations, and, of course, still less disposed to resort to allegory in order to remove difficulties in the painter's language. I admit that the painter may have alluded to an allegorical meaning of the miracle of the Well, but still would have illustrated the text of the miracle of the Well, and not an entirely different Biblical text as asserted by the author.

Are the odds against the literal interpretation really insurmountable? Not at all. In the first place, there is nothing to object to in Du Mesnil's suggestion that the artist combined elements from various water episodes in the Bible. But we do not need to assume such combination. The episode of the waters of Meribah accounts for all the details in the picture. The legend of twelve streams flowing to the twelve tents is not peculiar to Miriam's well, but is also referred explicitly to the waters of Meribah. We have only to combine two midrashic statements referring to the waters of Meribah to see how exactly the artist followed the legend referring to Meribah and not that referring to Miriam's well. The two statements read: 1) As soon as the water came forth, *it streamed to all the tents of Israel* (Shemoth Rabba, 26, 2). 2) "Many waters gushed forth and they overflowed (streamed) everybody who would direct praises towards them." (Bamidbar Rabba, 19, 9). The water therefore was directed towards the tents by the praises of the elders. Indeed, in our picture we see the elders of the tribes in the pose of directing praises toward the water. The legend of Miriam's well reads that "the elders drew the waters with the staffs in their hands." In our panel the elders have no staffs.

To this kind of startling *détour* belongs also the author's identification in the scene of the sacrifice of Isaac, of the figure standing at the entrance of a conical hut with *Ornan* the *Jebusite*. It does not occur to her that Ornan the Jebusite is entirely out of place in the picture as a whole, and that it would be utterly repugnant to rabbinic mentality to place *Ornan* the *Jebusite* higher than Abraham.

This, finally, prompts us to touch upon a weakness of specialists in general, namely the precedence given to considerations of the particular over requirements of the ensemble. It is most manifest in the treatment of the central panel in zone A (Panel 30). We see a figure seated on a throne flanked by two standing assistants, and surrounded by a number of people standing at a lower level. Now, in view of the fact that the panel occupies the most conspicuous place in the west wall, and is also flanked by two portrait panels representing Moses (or Moses and Joshua), the candid spectator cannot fail to realize, almost instinctively, that he is facing a scene of singular solemnity, and of highest religious significance. The suggestion generally accepted has been that the person on the throne should be identified with Moses in one of his most solemn appearances. The panel was designated as "Apotheosis of Moses." All this was brushed aside and rejected by the specialists, e.g. the author and Sukenik, on the ground that the dress of the person on the throne does not coincide with that of Moses in his other appearances. This seems to the author and Sukenik sufficient reason to dethrone Moses and to replace him with Pharaoh or Joseph. True, the scene would then represent an obscure, insignificant meeting of Pharaoh and Joseph respectively with the sons of Jacob, but the peculiarity of the dress would be satisfactorily explained.

Is there no other way to explain this peculiarity? The truth is that the specialists all too lightly discarded the well-founded suggestion of other scholars. Had they endeavored to motivate the irregularity of the dress instead of abandoning the Moses theory altogether, they would have been on the right track. As a matter of fact, the dress of the person on the throne is that of a king, such as Pharaoh or Ahasuerus. Hence, there was no need to dethrone Moses, but to look for a scene in which he appears in the pose of a king. Had they done so, they would have found that the scene represented in this panel is indeed one of the most impressive in Moses' life, namely the "Blessing" of the people before his death. Moreover, they would have found that the text alluded to is one of the most popular in Jewish life of the time, and was imparted to the children as soon as they were able to speak, namely: "Moses commanded us a Law, an inheritance of the congregation of Jacob. And he (Moses) was a king in Jeshurun (Israel), when the heads of the people were gathered, all the tribes of Israel together." (Deut. 33, 4–5).

This leads us to one of the most tempting historical revelations of the book, namely that the Jews of Dura considered themselves descendants of the Lost Tribes.

Now, one of the mainstays of this theory, the alleged preeminence given to Joseph, the Israelitic Messiah, over David in the panel under consideration, has just been discounted; there is no Joseph in this panel. For certain Joseph appears only once in the paintings, namely in "Jacob's Blessing." Even if we assume, as does the writer in his essay, an allusion to the Messiah *ben* Joseph, it does not go beyond the general conception of such a Messiah. The other Joseph motif to be found, according to the author, in Panel 10 is, at the most, conjecture, though, in the writer's opinion, an implausible one. Even if we accede to all the author's impossible conjectures, we have no evidence that the artist—better the designer—was from Dura, and not, as the writer is inclined to believe with Rostovtzeff, from a more important cultural center of the East. Nor is there any evidence that the congregation shared the artist's convictions whatever they might have been. Moreover, the very supposition that the Jewish congregation in Dura in the third century formed an autochthonous group which "lived on old historic ground," appears to us very doubtful. We are rather inclined to believe that the synagogue in Dura was built by rich merchants coming from Syria and Babylonia, especially from the latter place. It is not here the place to discuss this problem, but I deem it necessary to call the attention of scholars to the deplorable habit of turning highly conjectural construction into established historical fact.

The writer of this is the last to underrate the great importance of daring conjectures in our scientific work. Hence he cannot fail to recognize the value of Mrs. Wischnitzer's bold, challenging constructions, especially since her approach as well as her fundamental concepts are sound, and constitute a vigorous, salutary corrective to the formalistic-eclectic procedure of Prof. Sukenik in his recent book on the Dura Synagogue.

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LA DOMINATION ROMAINE EN EGYPTE AUX DEUX PREMIERS SIECLES APRES JESUS-CHRIST, by *P. Jouguet*. Pp. 63. Société Royale d'Archéologie, Alexandria, 1947.

Pierre Jouguet is one of the best-beloved of the old masters of the papyrological discipline, that strange collection of studies which draws its initiates together, whatever their several interests, into the contemplation of Wilhelm Schubart's "thousand years on the Nile," Macedonian and Roman and Byzantine Egypt. It has been affectionately said that if there were a society for the presidents of societies, he would be its president. He has not only devoted his life to the study of the Hellenistic Middle East, with particular emphasis on Egypt, enriching our knowledge with many special studies among which first place is still held, probably, by his relatively early but classic survey of the municipalities in Roman times, but has lived much of his life in the country, so that his writings show that intimate acquaintance with and sympathetic understanding of the eternal Egypt, the same today as in the time of Christ and under the Old Kingdom. All of these qualities appear in this little book, the result of a lecture delivered in the spring of 1946 in the Royal Society of Archaeology of Alexandria in its hospitable premises in the Rue Gerbel.

It is a charmingly written account, and very useful. It draws consciously on the administrative reconstructions of Sir Harold Bell and on the broader estimates of Rostovtzeff, but has a point of view of its own. While it is rather better than its word, and covers not only the first two but also the third Christian century, it has a somewhat unusual pro-Roman attitude, of which one welcomes the expression, although he may doubt the validity. It is true, of course, that the Romans brought order, and kept Egypt together. It is true that they meant well, and did not wish to kill the sheep which they were shearing. On the other hand, the Roman record is one of progressively worsening conditions, with the depopulation of the second century worse than that of the first. I know of no evidence to indicate that the Roman rule, there or elsewhere in the East, favored the Greeks or the Hellenists over any one else, although it did, of course, depend upon and encourage the establishment of cities of any sort, and in them the wealthy, who made up the governmental group, were ordinarily at least Hellenized. But this arrangement became increasingly insupportable, and in Egypt, the Roman policy of requiring a fixed total return from the tax structure, regardless of the country's ability to pay, was a pernicious and fatal error, which inexorably produced the results which Jouguet sketches vividly in his last pages.

In keeping with its quality as a book, the narrative is arranged in chapters, and equipped with plentiful, if by no means exhaustive, bibliographical notes. We may hope that it is the prelude to a new period of publication on the author's part, following the distractions of the war years, and in his welcome capacity as secretary of Prince Peter's new Hellenistic Institute in Alexandria.

YALE UNIVERSITY C. BRADFORD WELLES

VERBREITUNG UND HERKUNFT DER RÖMISCHEN FIBELTYPEN VON PANNONIEN, by *E. v. Patek*, Dissertationes Pannonicae, Ser. II. No. 19. Pp. 314, pls. 30. Budapest, 1942.

The book deals with the origin and classification of fibulae found in Pannonia and dated in Roman times, first century B.C. to fourth century A.D. It consists of

two parts, the first dealing with the problem of the origin and relation of the different types of Pannonian fibulae. The text is in Hungarian (pp. 9–75) and German (pp. 77–151). The second is a catalogue in Hungarian only (pp. 155–280). The main types occurring on Pannonian soil in considerable quantity (the author's geographical conception of Pannonia includes also upper Illyricum and the Drava and Sava rivers) are Pannonian fibulae of Celtic origin, Thracian and Illyrian fibulae, Germanic types, fibulae imported from northern Gaul and the Rhein limes, and Roman provincial types. Most of these groups are of heterogeneous origin, although probably of local manufacture. Pannonia was an excellent place in which the different types of fibulae, Roman and barbaric, could develop simultaneously and interbreed.

The author is well informed and brings in considerable comparative material found in Germany, northern Italy, and the Balkans, but he is less interested in relations with Gaul and Britain and somewhat neglectful of material from southern Russia and the Crimea.

On the whole, Patek's book presents a more systematic survey of Pannonian fibulae than the similar and earlier work of I. Kovrig, *Die Hauptypen der kaiserzeitlichen Fibeln in Pannonien*, Dissertationes Pannonicae, Ser. II, No. 4.

YALE UNIVERSITY N. P. TOLL

INVENTAIRE DE L'ARCHEOLOGIE GALLO-ROMAINE DU DEPARTEMENT DE L'AVEYRON, by *Alexandre Albenque*. Pp. 204, pls. VII, maps and plans, 7. Rodez, P. Carrere, 1947. 410 francs.

In the publication of this survey of the antiquities of Aveyron, designed to supplement the widely used but less intensive inventory which appeared in volume ix of Blanchet's *Carte archéologique de la Gaule romaine* (1944), M. Albenque has performed a genuine service for those working in the field of Gallo-Roman archaeology. With a careful bibliography that includes publications and procès-verbaux of local archaeological societies—frequently unavailable outside France—dating from the early nineteenth century to the time of publication, he has gleaned information on over 500 definitely located finds, however minor. The antiquities are presented in a geographical inventory arranged, for the benefit of the foreigner, not by commune but alphabetically by site and then located on a chart of the Department. Under each item one finds a summary of the factual information contained in all the cited bibliographical references, as well as frequent critical observations by the author. All of this material is made usable by a detailed index of individual objects. M. Albenque has written also three brief excursi on the aqueduct of Segodunum, on the Roman roads of Rouergue, and on origins of place names.

Plans of important architectural remains are included and a few of the most important works of art are illustrated; but this book is intended primarily as a tool for research, an inventory which will guide the scholar to more detailed publication of those objects in which he is interested. Within its defined scope, it represents meticulous labor which will lessen the difficulties of those seeking information on the Gallo-Roman remains of Aveyron, a contribution increased by the fact that some unpublished material received through oral communication is here cited for the first time.

WELLESLEY COLLEGE PHYLLIS PRAY BOBER

BELLINI'S FEAST OF THE GODS. A STUDY IN VENETIAN HUMANISM, by *Edgar Wind*. Pp. ii+81, pls. 74. Harvard University Press, Cambridge. 1948. $7.50.

In the accounts of Alfonso d'Este, Duke of Ferrara, an entry of November 14, 1514, records that Giovanni Bellini was credited with eighty-five ducats for a Bacchanal and that the work was completed *instante domino nostro i.e.*, in the presence of Alfonso himself. This work seems unquestionably to be the painting which now hangs in the National Gallery, Washington, under the title the *Feast of the Gods*.

The problem Dr. Wind has set himself to solve is how and when the picture was conceived, when it was painted, and, above all, what it represents. In his learned and most entertaining essay, however, considerably more ground is covered than the title promises. He regards the painting as an important link between two major Renaissance projects—the decoration of the Grotta in the castle of Mantua carried out under the direction of Isabella d'Este, and that of the Camerino in the castle of Ferrara commissioned by her brother Alfonso d'Este; and to provide the *Feast of the Gods* with its appropriate setting, he recounts the history of these two projects in detail. Here Professor Wind is at his admirable best. He analyzes the subject of all the pictures concerned; and demonstrates how each group of paintings was the result of a carefully worked-out scheme, which gave it unity in terms of Renaissance philosophy—in both cases the prevailing motive being a union of contraries, a *discordia concors*. He makes clear that in these schemes the final word lay with Isabella or with Alfonso, but also disentangles the probable debt in each case to advisers.

In some minor points Dr. Wind displays an inclination to jump to conclusions, which also appears in the main theme of the essay. Take first the known facts. At some unspecified date Isabella d'Este ordered from Bellini "a pagan fantasy" to match the two paintings by Mantegna in the Grotta. Isabella, as always, had

very definite ideas of what she wanted; but in Dr. Wind's words Bellini "found her payment far more readily acceptable than her program" and never produced the painting. Pietro Bembo's tactful handling of the matter, however, resulted in Isabella's writing on November 6, 1505, to Bellini, thanking him for accepting an order for a pagan fantasy, the program to be devised by Bembo. Further correspondence followed, but after May 11, 1506, there are no more letters on the subject. The next certain thing we know is that in 1514 Bellini was paid by Alfonso d'Este for the *Feast of the Gods*, which he finished in Alfonso's presence. Dr. Wind argues that the "Pagan fantasy" ordered by Isabella and the *Feast of the Gods* are the same picture. His best argument is the exceptional character of the theme in Bellini's work and the fact that the subject is one that shows traces of Bembo's invention; but it does no more than establish the likelihood that the subject suggested for Isabella was utilized for Alfonso.

Analysis of the subject, however, gives Dr. Wind further reasons for identifying the two pictures as one. With his identification of the main theme of the *Feast of the Gods* there can be no quarrel. On the extreme right Priapus is removing the robe from the sleeping Vesta; on the extreme left Silenus and the ass stand. The moment when the ass brayed and woke Vesta has not come; and the assembled company, save Mercury in the foreground, take no notice of Priapus. The incident derives from two passages in Ovid's *Fasti*, with slight variations. Dr. Wind suggests that both the theme and variations may be due to Bembo, who was much interested at this period in the cult of Priapus. He also points out that though the type of theme is exceptional in Bellini's work, it is not wholly without parallel; since of the five little paintings in the Venice Academy, intended to surround a mirror, one, Comus and Virtue (?), represents the idea that revelry is the acceptable reward of virtue; the same idea that might have emerged from comparison of the *Feast of the Gods* with other paintings in Isabella's Grotta such as Mantagna's *Minerva Expelling the Vices from the Grove of Virtue*. Incidentally, in making this point Dr. Wind, in a footnote, suggests a felicitous reconstruction of the arrangement of the mirror panels. Dr. Wind then proceeds to identify the other mythological figures in the painting, and here there is not likely to be serious dispute. But he goes further. He deduces that the picture commemorates a marriage between two persons represented under the guise of the central figures, Neptune and Gaea; this marriage, he holds, is that celebrated in 1502 between Alfonso d'Este and Lucrezia Borgia, whose features he sees respectively in those of Neptune and Gaea. To round off this theory, he identified Mercury with Ippolito d'Este, and the infant Bacchus with Ercole d'Este, the child of the marriage; from his apparent age of four or five Dr. Wind argues that the picture started in its present form early in 1513.

This is certainly a very attractive hypothesis. But how probable is it? If the picture in fact celebrated the marriage of Alfonso and Lucrezia and took that form in 1513, then the form must be radically different from any earlier conception; for it is almost impossible to believe that Isabella would have wanted at any time a painting primarily concerned with her brother's marriage. It is possible that in 1505, when Bembo was negotiating on her behalf, that the theme of Priapus and Silenus was proposed without any reference to the marriage; and that it was picked up later as the basis for Alfonso's painting. But this amounts to no more than saying that an idea for a painting, never executed for Isabella, was used for the next customer; in which case, there was only one picture, made for Alfonso.

But is it certain that the picture is connected with the Alfonso-Lucrezia marriage? That it introduces the symbol of a marriage (or of a less regular union) into a Priapus incident seems very probable. But it seems strange that Alfonso should have waited eleven years (accepting for the moment Dr. Wind's date 1513) to give pictorial record to his marriage; and when the identification of the figures in the painting with known persons is critically considered, doubts are increased. In most cases, the known portraits are not too reliable a basis for judgment; and comparisons in each case of the bone structure of the heads (the most reliable test) leaves me, personally, in doubt whether any of the identifications are more than "possibles."

If, on the other hand, the Alfonso-Lucrezia marriage hypothesis is rejected and the painting regarded as a generalized treatment of the theme, it then becomes more likely that the picture was begun for Isabella and held uncompleted until finished for Alfonso. But Dr. Wind can not have it both ways.

It is, however, one of the merits of the essay that it should thus arouse criticism. Dr. Wind's bold and vivacious interpretation of facts may not always win assent; but it throws light into many dark places and is a notable stimulus to further research and thought.

Museum of Fine Arts, Boston W. G. Constable

Eastern Elements in Western Chant: studies in the early history of ecclesiastical music, by *Egon Wellesz*. (Monumenta Musica Byzantinae, volume ii.) Pp. xi+212, pls. 12. Printed at the University Press, Oxford, for the Byzantine Institute, Inc., Boston, 1947.

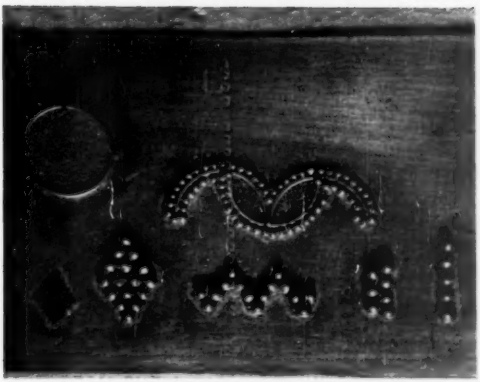
"The history of the origin and early development

of the music used in the various rites of the Eastern and Western Churches has still to be written." Thus Egon Wellesz begins the preface to his recent work in which he reopens the problems of early ecclesiastical music and attempts to prepare the ground for future research. This book faces intrepidly the principal questions before scholars of early music history: Is there a direct connection between Byzantine music and the Plainchant of the West? Did these melodies originate in Byzantium, or are they traceable further back to the music of the Early Christian Churches and to the chants of the Jewish Synagogue? Did local pagan hymnography and religious music play a part in this development?

Equipped by his own preliminary research and that of others, Wellesz began a comparative analysis of Eastern and Western melodies and soon found a number of chants obviously related in text, melody, cadence and formulae. He selected several of these melodies for detailed examination, chief among which was the bilingual antiphon, *O Quando in Cruce*. As a result of this study, evidence now points rather conclusively to the fact that the great bulk of both Byzantine melody and Plainchant is rooted in the chant of the Early Christian Churches and derived from common Syro-Palestinian sources. These chants were introduced into Western liturgy at an early stage of their development and, for the most part, were used in the Western Churches without major alterations up to the Carolingian reform. Other Eastern chants entered the West at a later time directly from Byzantium. These retained their original form with Greek text and were sung bilingually.

Wellesz approaches the entire problem with considerable humility and claims only to have prepared the ground for further study of Byzantine music. Nevertheless, his findings are also significant for the study of the early ecclesiastical music of the West, providing substantial material for work with Ambrosian and Gregorian melodies and mediaeval music.

CHARLES C. HIRT
UNIV. OF SOUTHERN CALIFORNIA



A

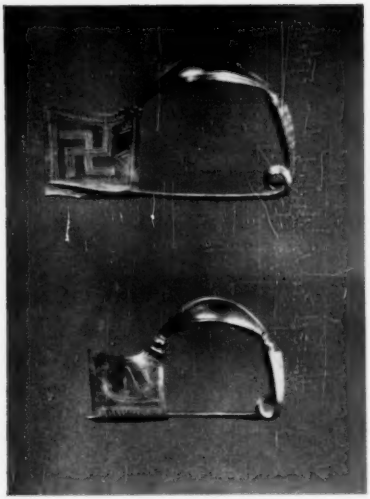
B

C

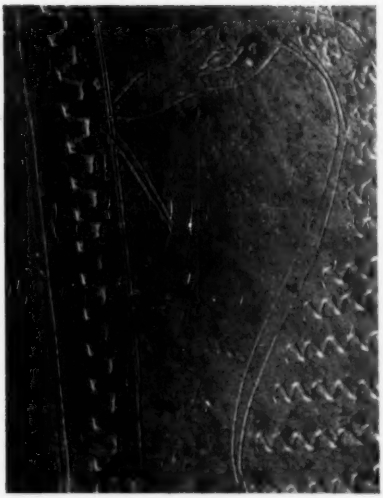
A: COLLOID SOLDERING. SAMPLER BY THE AUTHOR. B· ETHUSCAN PAIL. FOURTH CENTURY B.C. BY PERMISSION OF THE BRITISH MUSEUM. C: MIRROR CASE. TURNED PATTERN. GREEK. FOURTH CENTURY B.C. BY PERMISSION OF THE BRITISH MUSEUM.

[Maryon]

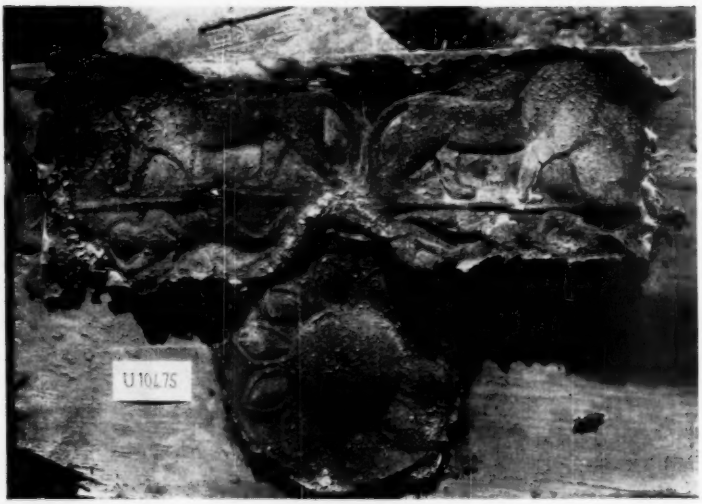
PLATE XVII



A



B



C

A: GOLD BROOCH FROM THE ELGIN COLLECTION. ENGRAVED. GREEK. EIGHTH CENTURY B.C. BY COURTESY OF THE EARL OF ELGIN. B: DETAIL OF BRONZE BROOCH, ENGRAVED. MID SEVENTH CENTURY B.C. BY PERMISSION OF THE BRITISH MUSEUM. C: SHIELD DECORATION. BRONZE REPOUSSE. FROM UR. BEFORE 3000 B.C. UNIVERSITY MUSEUM, PHILADELPHIA.

[Maryon]

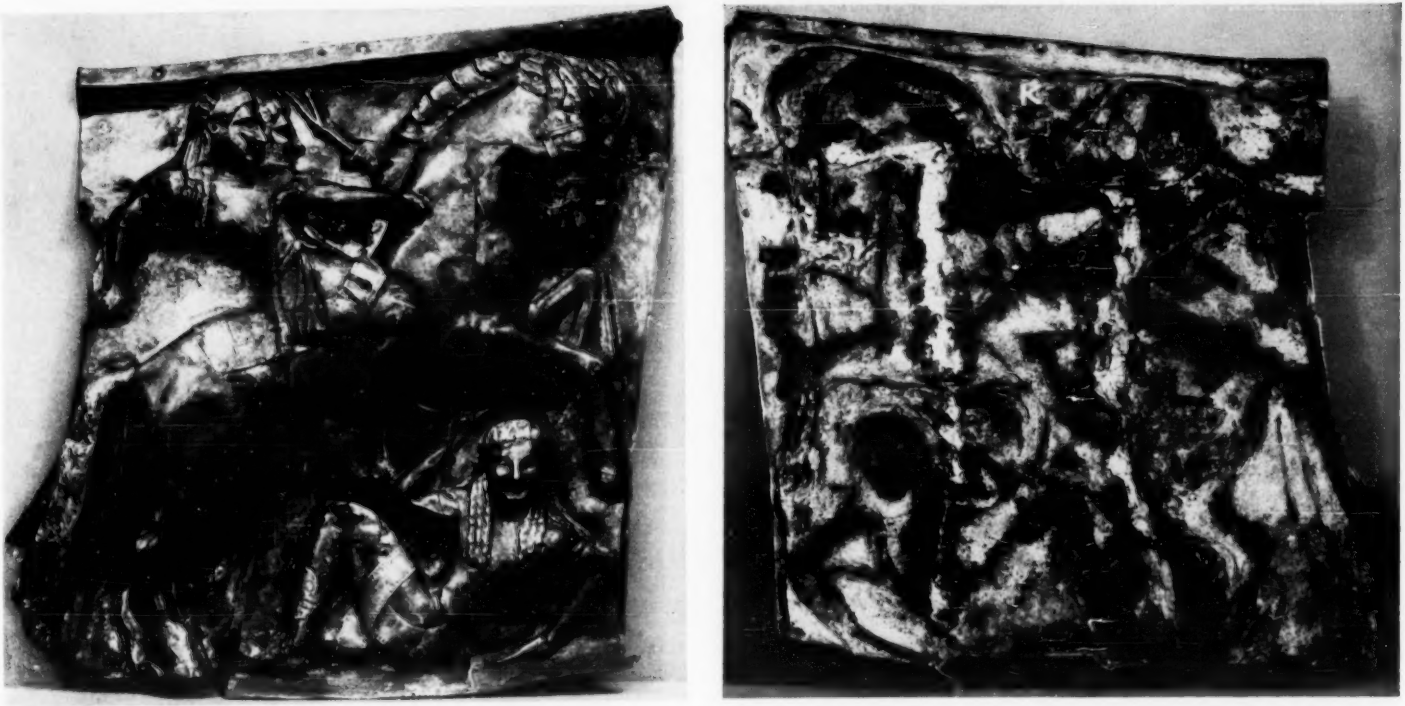
A

B

C

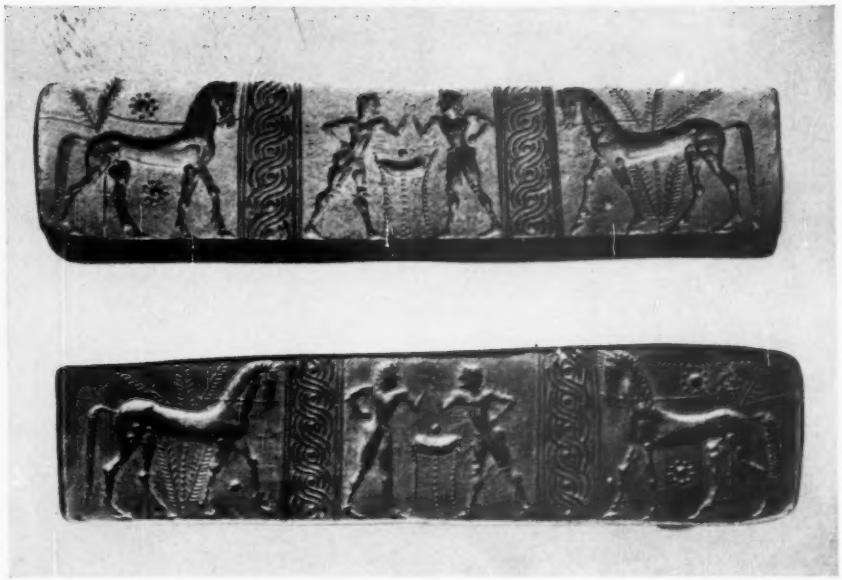
A: LION'S HEAD. BRONZE REPOUSSE. ETRUSCAN. SIXTH CENTURY B.C. B: GREAVES. BRONZE REPOUSSE. GREEK. ABOUT 540 B.C. C: BRONZE FROM RIVER SIRIS. REPOUSSE. GREEK. FOURTH CENTURY B.C. ALL BY PERMISSION OF THE BRITISH MUSEUM.

[Maryon]



A B

A: RELIEF WITH TWO AMAZONS ON HORSEBACK. SILVER REPOUSSE. ETRUSCAN OR GREEK WORK OF THE THIRD QUARTER OF THE SIXTH CENTURY B.C. FROM PERUGIA. HAIR, HORSES' HARNESS, AND ORNAMENTAL BANDS ON DRAPERIES ARE OF ELECTRUM PLATES, RIVETED ON. B: BACK VIEW OF SAME RELIEF. THE FINDERS CUT THE PANEL TO PIECES, THE WHITE LINES SHOWING WHERE THE FRAGMENTS WERE REASSEMBLED AND FASTENED TOGETHER WITH SOFT SOLDER. [Maryon]

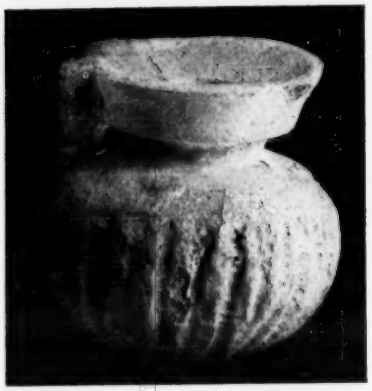


A

B

A: CORINTHIAN BRONZE DIE. ENGRAVED. ONE FACE AND A PLASTER CAST. GREEK. SIXTH CENTURY B.C. BY PERMISSION OF THE VISITORS OF THE ASHMOLEAN MUSEUM. B: GORGONEION. SILVER REPOUSSE. ETRUSCAN. ABOUT 500 B.C. BY PERMISSION OF THE BRITISH MUSEUM.

[Maryon]

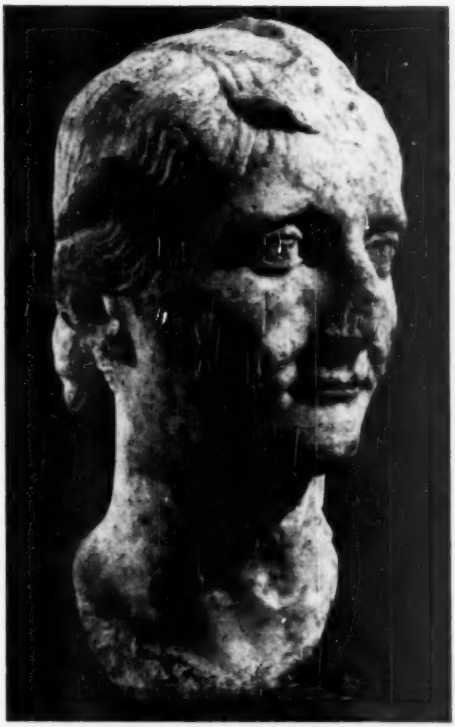


A

C

B

A: GLASS ARYBALLOS FROM HOYA DE SANTA ANA. COURTESY OF FERNÁNDEZ DE AVILÉS. B: BRONZE HANDLE IN A PRIVATE COLLECTION IN MALAGA. COURTESY OF GIMÉNEZ-REYNA. C: SPHYNX FROM BOGARRA. COURTESY OF COM. EXC. DE ALBACETE.
[Archaeological News]



A

B

C

A: HEAD FROM AMPURIAS. COURTESY OF DR. ALMAGRO. B: ROMAN STATUE IN THE ARCHAEOLOGICAL MUSEUM OF CARTAGENA. COURTESY OF DR. BELTRAN. C: SARCOPHAGUS FROM ONTUR, IN THE ARCHAEOLOGICAL MUSEUM OF ALBACETE. COURTESY OF COM. EXC. ALBACETE.

[Archaeological News]

PLATE XXIII

A

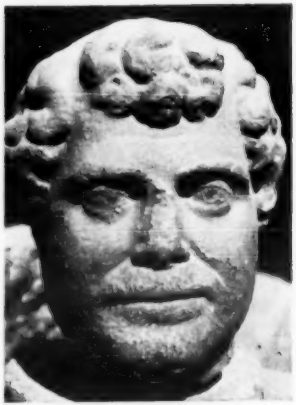
B

A: HISPANO-ROMAN STELE FROM GASTIAIN. COURTESY OF DR. URANGA. B: ROMAN MOSAIC FROM ZARAGOZA. COURTESY OF MUSEO ARQUEOLOGICO OF MADRID.
[Archeological News]

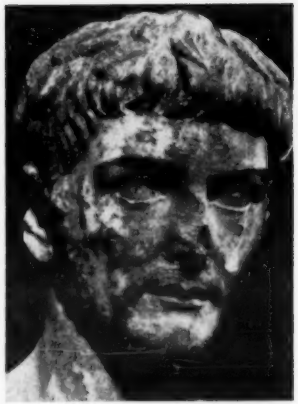
Mosaic from Lina in the Museo Arqueologico of Madrid. Courtesy of the Museo Arqueologico of Madrid.
[Archaeological News]

A

B

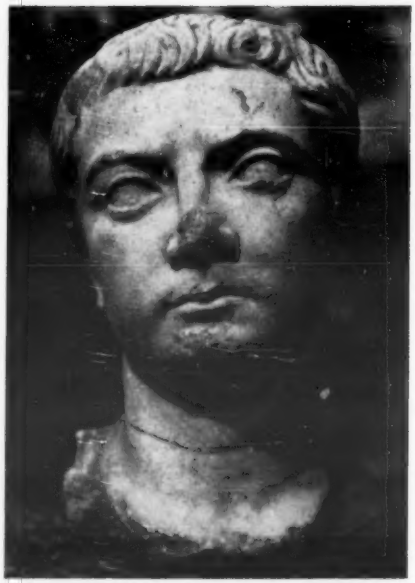


C



D

A: ROMAN HEAD FROM THE NECROPOLIS OF PALENCIA. B: BONE PLAQUE FROM THE SAME NECROPOLIS. BOTH COURTESY OF THE MUSEO ARQUEOLOGICO OF MADRID. C: HADRIAN AND D. DRUSUS MAJOR (?) FROM ANTEQUERA.
[Archaeological News]

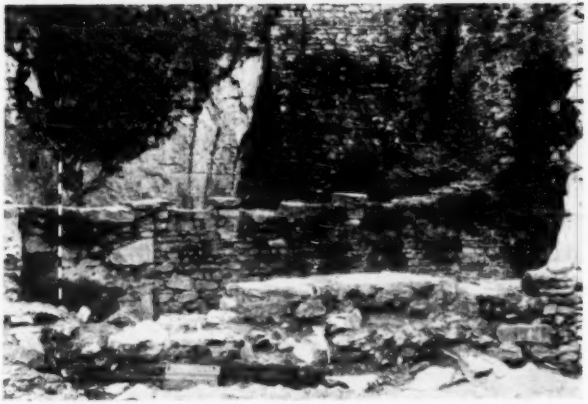


B A C

ROMAN HEADS FROM MERIDA. COURTESY OF THE MUSEO ARQUEOLOGICO OF MERIDA.
[Archaeological News]

PLATE XXVI

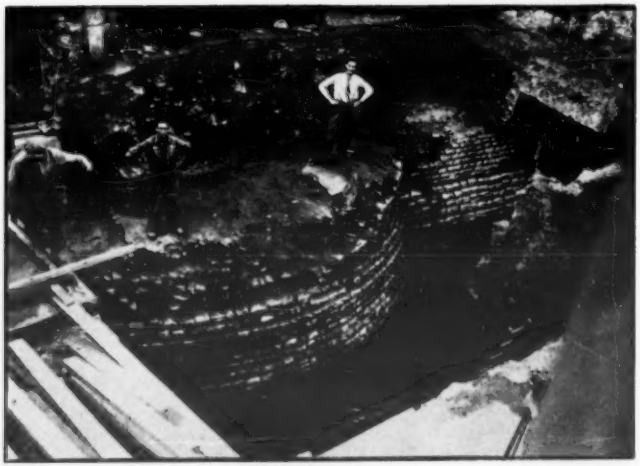
A



B

A: SARCOPHAGUS FROM VILA FRANCA IN THE MUSEUM OF BELEM. COURTESY OF PROF. HELENO AND DR. MESQUITA DE FIGUEIREDO. B: FIFTH CENTURY CHAPEL AT ST. MAURICE.
[Archaeological News]

A

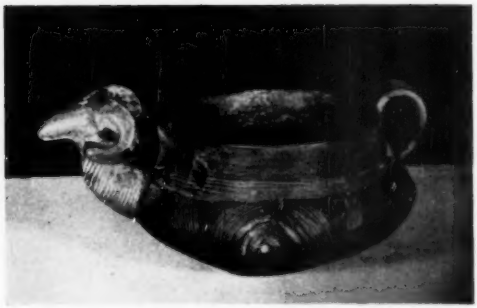


B

A: Neolithic and Bronze Age Necropolis at Collombey. B: Roman Tower at Arlon. Photograph of A. Geubel.
[Archaeological News]

PLATE XXIX

A



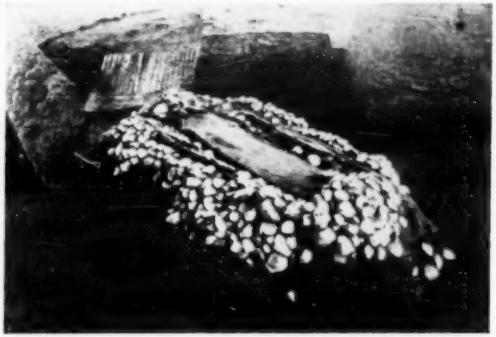
C

A: HALLSTATT BURIAL FROM LABAND-WALDENAU IN UPPER SILESIA. B: "DEATH CROWN" OF THE HALLSTATT PERIOD FROM ANDERNACH IN THE RHINELAND. C: CUP OF THE LAUSITZ CULTURE FROM SCHEBITZ NEAR BRESLAU.

[Archaeological News]

B

A



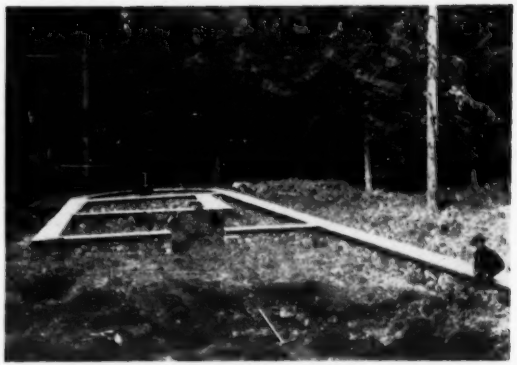
B

C

D

A: Tumulus in Schleswig-Holstein. B: Tree Coffin from the Tumulus. C: Hall of Archives at Magdalensberg.
D: Apse and Hypocausts at Magdalensberg.
[Archaeological News]

A



B

C

A: GRAVE AT JOIS. B: APSE OF THE FANUM OF ISIS NOREIA AT ULRICHSBERG, AFTER RECONSTRUCTION.
C: VIEW OF THE HYPOCAUST IN THE HOHER MARKT.
[Archaeological News]

THE SCHOOL OF AMERICAN RESEARCH

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The School now devotes its resources mainly to research and publication. It no longer conducts summer field sessions. It directs the Museum of New Mexico with its numerous branches, and has various activities in co-operation with the University of New Mexico. A staff of Associates and Fellows conducts the research work of the School in the various culture areas of the American continent. During the current year, projects are planned in the Southwest and Mexico. The School has just finished a five-year field expedition in Ecuador. It publishes monographs, handbooks of Archaeological History, papers, Administrative Reports and a monthly magazine, *El Palacio*.

For information, address the Director—

HON. BOAZ W. LONG
Palace of the Governors
Santa Fe, New Mexico

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MISS MARY T. WILLIAMS, Executive Secretary
American Academy in Rome
101 Park Avenue, New York 17, New York

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The American School of Classical Studies at Athens was founded for graduate students by the Archaeological Institute of America in 1881. In 1882 it was organized as a corporation under the laws of the State of Massachusetts. It is supported in part by the co-operation of leading American universities and colleges, in part by the income of endowment funds. No charge for tuition is made to the graduates of the supporting institutions. The School library contains about twenty thousand carefully selected volumes. The Gennadius Library of the School, devoted to Mediaeval and Modern Greece, contains about fifty thousand items.

The staff of the School consists of Director Carl W. Blegen; Assistant Director John L. Caskey; Shirley H. Weber, Librarian of the Gennadeion and Professor of Classics; Oscar Broneer, Professor of Archaeology (on leave 1948–1949); Edward Capps, Jr., Professor of Greek Literature and Archaeology (1948–1949); Paul A. Clement, Editor of Publications; Gorham P. Stevens, Honorary Architect; John Travlos, Architect of School Excavations; George H. Chase, Associate Editor of the American Journal of Archaeology; Aristides Kyrkitides, Business Manager; Miss Eurydice Dontastsopoulou, Assistant in the Gennadeion; and Miss Virginia Spurrier, Publication Secretary.

Four fellowships are available for students of the School, each with a stipend of $1,500. The Edward Capps fellowship is awarded without examination on the recommendation of the Executive Committee and preference is given to candidates primarily interested in the language, literature, and history of Greece, rather than in archaeology. The James Rignall Wheeler fellowship is awarded without examination on the recommendation of the Director of the School. The John Williams White fellowship in archaeology, and the Thomas Day Seymour fellowship in Greek language, literature, and history are awarded annually on examination. Correspondence about fellowships should be addressed to Professor Gertrude Smith, University of Chicago, Chicago, Illinois.

For general information, address the Secretary of the Managing Committee:—

Professor Charles A. Robinson, Jr.,
Brown University, Providence 12, R. I.

AMERICAN SCHOOLS OF ORIENTAL RESEARCH

The School in Jerusalem was founded in 1900. In 1901 it was incorporated under the laws of the District of Columbia under the name American Schools of Oriental Research. The Institute is represented on the Board of Trustees. The Schools are supported by more than sixty American Universities, Colleges and Seminaries and by private subscriptions. The School in Jerusalem offers to properly qualified persons excellent opportunities for the study of the geography, archaeology, and history of Palestine and Syria, and of the Semitic languages. It is affiliated with the British School and the French School in Jerusalem. No charge for tuition is made to members of the supporting institutions; other students are charged a fee of $80 per annum. The Baghdad School offers opportunity for research to a limited number of students through participation in its excavations and the use of its library.

The Director of the School in Jerusalem for the academic year 1948–49 is Professor Ovid R. Sellers, McCormick Theological Seminary.

The School in Baghdad was opened in 1932 and is housed in the Iraq Museum, Baghdad. The Director is Professor Albrecht Goetze, Yale University, and the Annual Professor is Professor George C. Cameron, University of Chicago.

The Schools offer annually one or more fellowships, the stipends depending upon available funds.

For further information, address the President—

Carl H. Kraeling,
Office of the School
Yale University
New Haven, Conn.

AMERICAN SCHOOL OF PREHISTORIC RESEARCH

The American School of Prehistoric Research was founded by the late Dr. George Grant MacCurdy and Mrs. MacCurdy in 1921. The headquarters of the School are at the Peabody Museum of Harvard University. The annual summer term for students formerly held in Europe is not being continued. Instead the School is devoting its resources to excavations and publications dealing with the prehistoric archaeology of the Old World. A limited number of properly qualified students may from time to time participate in its excavations as circumstances offer.

Hugh O'Neill Hencken, Director
American School of Prehistoric Research
Peabody Museum, Harvard University
Cambridge 38, Massachusetts